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STATE COLLEGE RECORD

VOL. 29 MARCH, 1930 No. 3

Summer School

JUNE 16—JULY 25, 1930

Announcement of Courses

North Carolina State College
of
Agriculture and Engineering

STATE COLLEGE STATION
RALEIGH, N. C.

PUBLISHED MONTHLY BY THE NORTH CAROLINA STATE COLLEGE OF AGRICULTURE AND ENGINEERING

Entered as second-class matter, October 16, 1917, at the post office at College Station, Raleigh, N. C., under the Act of August 24, 1912.

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Address official communications to

DIRECTOR OF THE SUMMER SCHOOL

State College Station

Raleigh, N. C.

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Assistant Professor of Sociology

SUMMER SESSION, 1930

The seventeenth Summer Session of the North Carolina State College of Agriculture and Engineering, which begins Monday, June 16th, and closes Friday, July 25th, has broadened considerably its instruction, particularly by offering additional courses in the Liberal Arts field. In the courses given, the work will be directed primarily to the needs of teachers in secondary education. The usual technical courses will also be offered, as well as courses for teachers of Industrial Arts who hold a certificate of Grammar Grade C or higher.

In addition to the subject-matter courses open to all students who have graduated from high school and particularly suitable for those persons preparing to teach in the secondary schools, there will be courses in the methods of teaching the various high school subjects. There will be offered advanced courses in the field of education, dealing with Philosophy, History of Education and Psychology. The purpose of these is to build upon the several courses in Education that have been given heretofore and which will be repeated in 1930.

The State College Summer School is desirous of using its faculty and laboratories, which are particularly well prepared and equipped in the scientific and technical fields, to meet the rapidly developing needs of the State. The Summer School is, however, making ample provision for those persons who want training in the advanced academic subjects, and is providing the best of instruction in the Liberal Arts studies.

HIGH SCHOOL PRINCIPALS AND SCIENCE TEACHERS

There will be offered for principals and teachers of high schools, both professional and subject-matter courses. Special courses in methods of teaching high school science, together with courses in the various physical sciences, will occupy a large place in the Summer School. This is made necessary by the demand throughout the State for professionally trained teachers of science in the secondary schools. Emphasis will be placed upon training teachers of third year science in the high school, and subject-matter courses in Geography will be given in addition to a course in Methods of Teaching Geography.

Dr. J. Henry Highsmith, State Supervisor of High Schools, will have charge of the general courses for high school principals and teachers. Professor Merle F. Showalter will offer the courses in the teaching of science, and will give the course in Methods of Teaching Geography. An effort will be made to help the teachers in the planning of laboratories for high school science and in the proper use of laboratory equipment. Teachers planning to take the science courses are requested to bring their high school texts.

AGRICULTURE

A six-weeks course in professional and technical subjects will be given for the teachers of agriculture. It is designed for both the teachers already in service, and for prospective teachers of agriculture in the vocational schools. The courses serve to keep teachers informed of new developments as well as to count toward advanced degrees.

COTTON CLASSING

The courses in Cotton Classing are arranged to instruct the producer in grading staple, to induce him, in consequence, to try to grow cotton of better staple, and to aid him in selling his product to better advantage. They are

open also to buyers of cotton. The courses are arranged for young and middle-aged men, and are not intended for boys, nor for men who lack earnestness of purpose. There are no entrance requirements for the Cotton Classing courses except that the applicant should have a good English education.

INDUSTRIAL ARTS

During the Summer School emphasis will be given to the preparation of teachers of industrial arts for the various communities of North Carolina. The rapid growth of industrial education in our State is creating a demand for supervisors and teachers who are competent to develop it in the right direction. Courses will be given in shop practice, mechanical drawing, methods of teaching, subject-matter, and administration.

Supervisors and teachers are needed for the work in the junior and senior high schools, part-time and continuation schools, and evening schools. The need is for those who are familiar with both general and vocational education and are capable of placing the proper emphasis on the courses to be outlined for a particular locality.

Industrial arts education depends largely upon the soundness of the philosophy of the type of training which underlies the introduction of industrial studies. For this reason those professionally minded teachers with vision will welcome courses giving them a better basis for their work in the classroom.

Courses in Textiles designed for men who are employed in the manufacturing plants, as well as courses for teachers who are employed in the textile communities, will be given. These courses will be arranged on a unit basis in order to meet the needs of the various groups who may wish to come to the College for different periods.

INDUSTRIAL ARTS FOR ELEMENTARY TEACHERS

The purpose of the courses in Industrial Arts for the Elementary School is to create interest in these problems using them to motivate the Elementary School subjects and to prepare teachers and supervisors who will become leaders in introducing this work in their school systems. Credit for these courses may be used either in raising or renewing certificates. The courses will be open only to those who hold a Primary or Grammar Grade C Certificate or one of higher grade.

Teachers desiring to raise or renew their certificates will take the first two of the courses in the list following, and one course selected from the remainder of the list.

Ed. s353. The Theory of Industrial Arts in the Elementary School. Five hours a week; three credits.

Ed. s354. Practical Arts Problems. Ten hours a week; three credits.

Tex. s115. Courses for Teachers. Four hours a week; two credits.

Ed. s201a. Educational Psychology. Five hours a week; three credits.

Ed. s327. Standard Testing and Measuring. Five hours a week; three credits.

Ed. s328. Tests, Examinations, and Grading. Five hours a week; three credits.

Ed. s320. Vocational Guidance. Five hours a week; three credits.

Ed. s355. Art Studies in the Elementary School. Ten hours a week; 1½ or 3 credits.

NOTE.—The above courses are described elsewhere in this bulletin.

PHYSICAL EDUCATION AND COACHING

The Summer School will offer opportunity for coaches and teachers of physical training to take specialized courses in the Department of Physical Education. The courses in athletic coaching and physical training are arranged especially for instructors already engaged in teaching during the regular school year and for others who wish to supplement the preparation they may have received in college. The courses take up the more important problems of coaching, and are designed for the purpose of fitting men more completely to take charge of athletics and physical training in schools and colleges throughout the country, and for fitting women to coach basketball, and direct physical training programs.

Leaders in education now recognize the fundamental need of athletics as an important part of any broad educational program. The demand for competent teachers, supervisors, and directors far exceeds the supply. This is especially true in case of men qualified both in coaching and in conducting classes in physical training. Our schools are seeking men who are college trained to take charge of their athletics; men who are versed in all phases of athletic coaching and administration. Approximately thirty states in the Union now have adopted legislation making physical education a prescribed part of the elementary and secondary school program.

RECREATION

There will be supervised recreation, consisting of tennis tournaments, baseball, volleyball, basketball and handball. Instruction in swimming will be provided for both men and women. The new swimming pool, lockers and showers, and other gymnasium facilities will be available to all students.

GRADUATE STUDIES

Practically all of the departments of instruction at the College that are offering undergraduate work during the Summer School will also offer graduate work. Persons who have completed their undergraduate work and desire to continue toward an advanced degree may do one-half term's work by pursuing graduate studies during the six-weeks Summer School. Special provision will be made to pursue *in absentia* graduate work started at the College during the Summer School. Credit will be given for this work done away from the College, provided it is arranged and registered for. In special cases, a student may continue work at the College or in the field for the whole summer and receive a full quarter's credit.

COLLEGE CREDIT

Beginning with 1924-1925, the regular session of State College was divided into three terms; consequently "credit," as used throughout this bulletin, refers to term credit, or twelve weeks work, unless otherwise designated. Therefore, in order for the college-credit courses to count for a full term's work, they will be given, if for five credits, ten periods a week; if for three credits, five periods a week. Since, however, no student will be allowed to take more than eighteen hours of work per week without special permission, this restriction will prevent a student's taking more than one ten-period course.

Thirty days of work during the six weeks will be accepted for a term's work if all the requirements of the course are met. This includes one day for registration and one day for examination.

The courses for college credit are open to graduates of standard high schools, and to others of equal qualifications. These courses give college students the opportunity to remove conditions, so that they may enter their

classes in the fall in full standing. They will also make it possible to secure advanced credit. The college-credit courses are also open to teachers who hold standard State certificates.

All professional courses offered will have value both for teachers' certificates and for college credit. The subject-matter courses may be counted by teachers for academic credit towards securing or raising their certificates.

PROVISION FOR BOTH MEN AND WOMEN

All courses are open to both men and women. Special accommodations in the dormitories are provided for the women, and special attention will be given to their comfort and welfare.

ACCOMMODATIONS FOR WOMEN

The fifth and sixth dormitories will be set apart for women in attendance upon the Summer School and will be under the supervision of a capable and experienced matron, one for each building, with Mrs. R. R. Smithwick acting as Dean of Women.

The variety of courses offered during the State College Summer School should appeal not only to those women in the teaching profession, but to those who are interested in taking advantage of these courses in preparation for other vocations and leading toward a college degree. Young women living in Raleigh who are working for a college degree should take advantage of this opportunity.

ENTERTAINMENTS AND SOCIAL FEATURES

Arrangements are being made for several high-grade entertainments during the session. A reception for students and faculty, followed by other social and recreational events such as week-end picnics and excursions, serve to foster a congenial spirit in the student body as well as to keep students physically and mentally fit for efficient study.

FEES AND EXPENSES FOR SIX-WEEKS STUDENTS

All fees and other charges are payable in advance or upon registration, and all checks should be payable to N. C. State College.

Registration	$12.50
*Tuition (except for teachers)	10.00
Classroom and Laboratory Maintenance Fee	5.00
Room Rent, each person (two or more in room)	7.50
	$35.00

All students occupying a room alone will be charged $10.00.

Students taking in excess of the normal load of 3 courses will be charged a fee of $5.00 for each additional course. Double courses will be counted as two courses.

The college dining room will not be kept open during Summer School. The cafeteria, which is in the same building with the dining room, will be run for the benefit of the Summer School students and faculty.

*FREE TUITION FOR TEACHERS

Exemption from the payment of the $10.00 tuition fee is provided by legislative enactment for teachers now in service in the schools of North Carolina, and for residents of the State who are preparing to teach during the school year 1930-31.

Teachers now in service and students preparing to teach, who are residents of the State, will be required to sign the usual teacher's agreement to teach in North Carolina for at least six months, or to pay the tuition within one year from date of registration in case they do not teach.

A great many members of the faculty and regular college students eat in the cafeteria and find it very satisfactory, and about as cheap as the dining room, with the addition of greater variety from which to select, and longer periods in which to eat. The cafeteria charges are reasonable.

The registration fee is not returnable after June 5. There will be no refund of room rent or tuition after June 21.

There will be a key deposit of twenty-five cents, which amount will be refunded when the key is returned.

BOARD AND LODGING

Students will be assigned to rooms upon their arrival at the College. Those who prefer to have their rooms reserved can send in their registration fee of $12.50 and be assigned to rooms in advance. Applicants who find that they will not be able to occupy the rooms assigned to them are required to give notice to the Director five days in advance of the date fixed for occupancy or to forfeit to the Summer School the payment advanced for registration. Those who give notice in time that they cannot attend will have their payments returned.

In case it is desired to change the room assignments, permission to do so must first be obtained from the Superintendent of Buildings. In no case may a room be taken until it has been regularly assigned.

WHAT STUDENTS NEED FOR THEIR ROOMS

The College rooms are supplied with necessary furniture. Each student, however, should bring towels, sheets, one pillow and two cases, and two bedspreads for a single bed.

REGISTRATION

All registrations will be conducted in Frank Thompson Gymnasium beginning at 9 a. m., on June 16th. Students are expected to report in person on Monday, June 16th, so that they may begin class work on the morning of Tuesday, June 17th, at 8 o'clock. Deans and Directors of Instruction will be present to advise students relative to courses.

HOURS OF WORK

It is important to notice that teachers are required to take at least fifteen hours weekly in order to receive credit for one summer session. Additional credits may be taken by students if they have points to justify, and by teachers on approval of the Director. Each student will be allowed to audit a class five times, if agreeable to instructor.

The Summer School authorities reserve the right to cancel any course for which the registration is less than eight.

THE ATTRACTIONS OF RALEIGH

Being the capital of one of the original thirteen states, Raleigh is unusually rich in historical collections, fine public buildings, and interesting places and memorials. It is interesting, also, for its churches, its schools, its hotels, and its office buildings, and its growing commercial and industrial activity. Opportunities will be given the students to visit the places of interest.

The various churches welcome all Summer School students to Sunday school and church services, and their pastors have taken a very friendly interest in the morning services at the College auditorium. Raleigh will be found in all respects a delightful place of residence.

THE SOCIAL CENTER

The Y. M. C. A. building will be the social center of the school. This building contains a reading room, an auditorium, several reception rooms, telephone booths, and other conveniencies for the promotion of the social life of the students.

THE D. H. HILL LIBRARY

The D. H. Hill Library, one of the most beautiful libraries in the South, will be open for the use of Summer School students. Its spacious reading and periodical rooms afford an opportunity for research and study under the most pleasing conditions. The consolidation of the various departmental libraries into the central library, together with the new volumes purchased during the year, have greatly increased the library facilities. The library maintains a competent staff adequate to render every possible library service.

The Olivia Raney Library and the State Library will also be open to Summer School students for reference work.

FRANK THOMPSON GYMNASIUM

The Frank Thompson Gymnasium is without doubt the finest and best equipped gymnasium in the South. The main floor is 130 by 110 feet, with an intercollegiate basketball court of maximum size, and seating capacity for 2,500 spectators without using the gallery. Two maximum sized cross courts make it possible to run off class and tournament games. The auxiliary gymnasium or exercise room is 110 by 40 feet. Both of these rooms are equipped with full gymnasium apparatus and handball courts. The basement is fitted up with 1,000 private steel combination lockers. Team training rooms, equipped with private showers and lockers, a towel service room, an equipment room, and a wrestling and boxing room compose one-half of the basement. The other half is given over to the Armory.

The swimming pool is located in an annex amply lighted both by windows and skylights, and finished with white tile. The pool is 75 by 30 feet, with room sufficient to accommodate several hundred spectators.

RELIGIOUS ACTIVITY

The churches of the city extend to the students of the Summer School a warm welcome and many of their Sunday Schools have special classes for them. A program of visiting will be arranged for those who wish to see the most successful Sunday School classes of the city in operation.

SHORT COURSE FOR FARMERS, FARM WOMEN AND BOYS' AND GIRLS' CLUB MEMBERS

FARM AND HOME WEEK—JULY 29, 30, 31, August 1, 2

This week, in addition to the usual Farmers' and Farm Women's Convention, there will be short courses in Poultry, Livestock, Field Crops and Marketing; Food Selection and Preparation, Clothing and Room Improvement, for those farmers and farm women who are interested in these subjects.

4-H CLUB SHORT COURSE

A course for 4-H Club members, Local Leaders and Extension workers will be held August 4 to August 9. This course is designed to meet the needs of the 4-H Club boys and girls who wish to come to the college for a week of instruction in subjects relating to Agriculture, Home Making and Leadership Training.

This course will be conducted by the N. C. Agricultural Extension Service. Additional information may be had from County Farm or Home Agent, or by writing to L. R. Harrill, State Club Leader, State College Station, Raleigh, North Carolina.

COURSES TO BE OFFERED IN THE SUMMER SCHOOL

ABBREVIATIONS FOR BUILDINGS

G.—Gymnasium
H.—Holladay
P.—Page
P. & E.—Physics and Electrical Engineering Building
Pe.—Peele Hall
Pk.—Polk Hall
Pt.—Patterson
R.—Ricks
T.—Textile
Pl.—Pullen Hall
W.—Winston
Z.—Zoology Building

AGRONOMY

Agron. s1. Cotton Classing. Twenty hours a week for six weeks. No college credit. Mr. Darst, Mr. Cotner. 9-1 M. T. W. T. F. Pt. 45.

The Summer School of Cotton Classing is designed to prepare men to enter the cotton business and to enable producers to become familiar with grades, so that they may handle their cotton more efficiently from the time it opens in the field until it is baled.

Inefficient handling at the present time is causing the State a loss of millions of dollars annually. The business side of cotton transactions as well as the practical grading and stapling will be included in the course.

Experience will not be necessary for taking the course, as the class will work in groups according to previous training. Students may qualify as competent cotton classers at the expiration of this course.

The course will consist of lectures and daily practice in grading and stapling cotton samples, according to the Universal Cotton Standards, including the descriptive grades as well as the official.

The course will be given each day, with the exception of Saturday, for four hours a day.

The first period of each day will be devoted to lectures and discussions, and the remaining time will be used in the actual practice of grading and stapling of cotton. An expert from the United States Department of Agriculture will assist in this course.

The Cotton Classing course is designed for a special group, and does not carry college credit. There is a flat charge of $27.50 for the whole course in Cotton Classing. Persons registered for fifty per cent or less of the course will be charged $15.00. All fees paid on or before registration.

Agron. s201. Cereal Crops. Prerequisite: General Field Crops. Five hours a week; three credits. Mr. Darst, Mr. Cotner. 11 M. W. F.; 11-1 T. Th. Pt. 26.

Lectures and recitations in history, production, cultivation, improvement, harvesting, storage, and marketing. Laboratory consists of structural studies, seed judging, variety identification, and commercial grading. Special problems in cereal production.

Agron. s210. Cotton Production, or s215. Tobbacco Production. Five hours a week; three credits. Mr. Cotner. 8 M. T. W. T. F. Pt. 45.

Lectures and recitations on history, production, adaptation, types and varieties, including cultivation, harvesting, grading, and marketing, will be given. Laboratory consists of variety studies, the classing of cotton, and the grading of tobacco.

Agron. s330. Advanced Seed Judging and Grading. 12 M. W. F. 2-4 T. Th. Prerequisite: Cereals, Five hours a week; three credits. Mr. Darst, Mr. Cotner. Pt. 26.

Lectures and practice in planning, arranging and judging field crops exhibits. Study of the Federal grain and hay standards. A course planned to develop experts in the judging of field crop seeds and in the grading of grain and hays. A course designed for agricultural extension workers and vocational teachers.

Agron. s351. Advanced Study of Crops Research. Undergradute credits, 3-9; Graduate credits, 2-6. Elective for graduates and advanced undergraduates . Mr. Darst, Mr. Cotner. By arrangement. Pt. 26.

A field study of the research work and demonstration work in crops. This course will be based directly upon experimental work in progress.

The crop or crops for study will be agreed upon by the class.

SOILS COURSES

Agron. s315. Soils of the Southern States. Five hours a week; three credits. Mr. Cobb. 9 M. T. W. T. F. Pt. 16.

A study of the origin, characteristics, distribution and natural productiveness of the soils of the Southern States. Emphasis is placed on the agricultural adaptation and fertilizer needs of the more important types. The majority of southern soils are represented in North Carolina and samples of other soils are available for laboratory study. Field trips form an important part of the course.

Agron. s321. Soil Technology 1. Four or eight hours a week; two or four credits. Mr. Cobb. By arrangement. Pt. 16.

A laboratory and library study of technical methods used in the investigation of soils.

Agron. s324. Fertilizer Problems. Five hours a week; three credits. Mr. Cobb. By arrangement. Pt. 16.

Designed especially for agricultural teachers and specialists.

A course dealing with fertilizer problems which the agricultural teacher or specialist may meet with in connection with his work. It includes a consideration of methods of carrying out fertilizer demonstrations, a study of the results of fertilizer experiments, the modification of ready mixed fertilizers, the proper use of the new concentrated fertilizers, etc. A trip is made to the Coastal Plain Test Farm for the purpose of studying the fertilizer experimental plots.

Agron. s350. Soil Problems. One credit. Mr. Cobb. By arrangement. Pt. 16.

A seminar course for advanced undergraduates in agriculture.

Agron. s410-A. Seminar. One credit. Mr. Cobb. By arrangement. Pt. 16.

A graduate seminar in soils.

Agron. s430. Soil Research. Five or ten hours a week; three or six credits. Mr. Cobb. By arrangement. Pt. 16.

A study of the methods and results of research in the various branches of soil science.

ANIMAL HUSBANDRY AND DAIRYING

A. H. s102. Animal Nutrition. Ten hours a week; five credits. Mr. Haig. 8-10 M. T. W. T. F. Pk. 110.

A study of the principles of Animal Nutrition, including the physiology of the digestion of feeds, the uses of nutrients in the body, feeding standards as adapted to different classes of farm animals.

A. H. 103. Dairying. Four hours lecture; four hours laboratory; three credits. 11 M. T. W. T. F. Pk. 110. Mr. Haig.

This is a general course in dairying, dealing with the secretion, composition, and properties of milk, with the factors influencing the quality and quantity of milk, and with care of milk and cream on the farm. It includes a study of the different methods of creaming, the construction and operation of farm separators, the principles and application of the Babcock tests, the use of the lactometer, and buttermaking on the farm. Lectures supplemented by text.

A. H. s203. Advanced Stock Judging. Five hours a week; three credits. Mr. Haig. 8 T. T.; 8-10 M. W. F. Pk. 110.

Consideration is given to animal conformation, quality, and condition, with reference to market and show-yard requirements; to the selection of horses and mules, beef cattle, dairy cattle, sheep, and swine for the feed lot, the market, and exhibition, and to judging at livestock shows. A textbook is used, supplemented by lectures, laboratory, and field work. The course is designed to give the student a more thorough knowledge and greater appreciation of good livestock.

A. H. s211. Advanced Nutrition. Eight hours a week; four credits. Mr. Haig. 2-4 M. T. W. T. Pk. 110.

A study of recent scientific publications on the chemistry and physiology of the nutrition of animals, and the chemical and physical changes and processes involved in the activities of animal life. Animals are used to demonstrate the effects of the various nutrients and rations.

A. H. s304. Herd Improvement. Prerequisite: A. H. 101, 102, 103. Four hours a week lecture; four hours laboratory; three credits. Mr. Haig. 12 M. T. W. T.; 2-6 F. Pk. 110.

This course is designed for training students as Supervisors of Cow-Testing Associations in North Carolina. Rules and requirements for Advanced Registry Testing are studied in detail. Lectures are supplemented with laboratory work and the student is required to do practical work in keeping feed costs, milk weights, butterfat tests necessary in the efficient management of Dairy Associations.

BOTANY

Botany s101. General Botany. Nature of the Higher (Crop) Plants. Two lectures; two recitations; eight hours laboratory; four credits. Equivalent to Freshman and Sophomore courses given the first quarter of the regular college year. Mr. Shunk, Mr. Whitford. 8 M. T. W. T.; 2-4 M. T. W. T. Pt. 47.

This course is offered to meet the needs of the following groups of students:

(1) Teachers of Biology who desire to enhance their knowledge of the higher plants, especially the crop plants.

(2) Agricultural workers who desire a thorough review of the fundamental structure and functions of the crop plants.

(3) College students who, having failed this course in past years, desire to change their record in regard to it.

In the course the fundamental structural and functional facts concerning the crop plant are taken up. Beginning with the flower, the work proceeds to the problems of fruits, seeds and germination of seeds. Then some fundamental biology is given relating to cells and tissues. Following this, the structural and functional data concerning roots, stems, buds, and leaves are presented. Numerous excellent microscope slides are used to present the minute structural aspects, while the functional aspects are given with the aid of a number of striking demonstration experiments. Fresh crop plant material is used throughout the course for illustrative purposes. The course closes with a thorough review and summary of the whole field studied.

Botany s202. General Bacteriology. Four recitations; eight hours laboratory; four credits. Prerequisite Bot. 102 or equivalent. Mr. Shunk. 11 M. T. W. T.; 2-4 M. T. W. T. Pt. 47.

This course, which is basic for all other work in the subject, gives an introduction to the principles of bacteriology. All of the various fundamental phases of bacteriology are taken up. Through laboratory work the student learns modern cultural methods of handling and studying bacteria. Toward the latter part of the term opportunity will be offered students to do special laboratory work on water, milk, and disease-producing bacteria, if they so desire.

Botany s203. Systematic Botany. Two lectures; eight or sixteen hours of laboratory; five credits. Equivalent to Junior and Senior courses given in third quarter of the regular college year. Prerequisite: Elementary Botany. Mr. Shunk, Mr. Whitford. 9 T. Th.; 2-5 M. T. W. T. F. Pt. 47.

This course is presented for all students who desire a more intimate outdoor acquaintance with plants, both cultivated and wild. Teachers of biology, agricultural students, and all others interested in natural history will find this course especially desirable.

The basis of the course consists of practice in identification of plants with the aid of the plant manual. Material collected on the field excursions is brought into the laboratory and studied with the aid of binocular microscopes. In the lectures, the fundamental characters of the natural plant families are pointed out and the voluntary relationships of these families are discussed. On the frequent field excursions the class will visit the floristically rich areas about Raleigh. On these excursions a few lectures will be given, dealing with the relation of plants to their environment. By the time the course closes, the student should personally be acquainted with the commoner trees, shrubs, wild flowers, and weeds of the State.

Botany s400. This graduate course will be arranged to suit the students and the Department.

CHEMISTRY

Chem. s101a. General Chemistry. Five hours in classroom and five hours in laboratory each week. Four credits. Equivalent to first term General Chemistry as given in the regular college year. Mr. Williams, Mr. Jordan. 8 M. T. W. T. F.; 11-1 M. F. W. 114.

Composition and properties of air and water. First principles of Chemistry, such as atomic theory, laws of chemical combination, valence, chemical

formulas and equations, oxidation, reduction, behavior of gases and solutions. Study of a few typical elements, such as oxygen, hydrogen, carbon and nitrogen, together with their simpler compounds.

Chem. s101b. General Chemistry. Five hours in classroom and five hours in laboratory each week. Four credits. Equivalent to second term General Chemistry as given in the regular college year. Mr. Williams, Mr. Jordan. 9 M. T. W. T. F.; 11-1 T. Th. W. 102.

Particular attention given to chlorine, sodium, nitrogen, sulfur, flourine, bromine, and their compounds. Study of such common substances as salt, lye, soda, carbon disulfide, prussic acid, petroleum, coal tar, acetylene; ammonia and its more interesting uses such as in ice machines: sulfur dioxide in household refrigerators and as a bleaching and germicidal agent; compounds of nitrogen in warfare and agriculture. Introduction to acids, bases, salts, ionization, hydrolysis, equilibrium, the periodic law and the new theories of the structure of the atom.

Chem. s101c. General Chemistry. Five hours in classroom and five hours in laboratory each week. Four credits. Equivalent to third term General Chemistry as given in the regular college year. Mr. Williams, Mr. Jordan. 1 M. T. W. T. F. Laboratory by arrangement. W. 114.

Chemistry of clays, ceramics, glass, cement, soils, fertilizers, insecticides, lime, hard water, alloys, paints, storage batteries, photography, flames and explosions. Compounds and properties of phosphorous, arsenic, bismuth, silicon, boron, potassium, calcium, magnesium, zinc, aluminum, iron, tin, lead, nickel, copper, mercury, silver, gold, platinum and other less common elements. Thermochemistry, colloids and radioactivity.

Chem. s111. Qualitative Analysis. Two hours lecture with four laboratory periods of three hours each, per week. Equivalent to one term of college work. Four hours credit. Prerequisite: General Chemistry. Mr. Williams, Mr. Jordan. 11 T. Th.; 8-11 M. T. W. T. F.

A systematic study and separation of the metallic ions and non-metallic ions into their respective groups, their identification and the chemical reactions involved. The last two weeks will be given over to the complete analysis of mixed salts, compounds, and alloys.

Chem. s112. Quantitive Analysis. Two lectures and twelve hours laboratory. Equivalent to one term of college work. Four hours credit. Prerequisite: Qualitative Analysis. Mr. Williams. 10 M. W.; 2-5 M. T. W. T. F. W. 102.

This work will deal with the theory and practice of making up and standardizing acids, bases, di-chromate and permanganate solutions, also the determination of the strength of unknown acids and bases, the analysis for the per cent purity of iron ores, oxalates, sulphates, magnesium phosphate rock, etc.

Chem. s141. Organic and Biological Chemistry. Five hours a week; three credits. Prerequisite: General Chemistry. Mr. Jordan. By arrangement. W. 114.

A systematic study of the compounds of carbon with emphasis on those substances of particular importance in the life of man. Such common substances as alcohol, ether, chloroform, glycerin, quinine, carbolic acid, Rochelle salt, saccharin, aspirin and benzoate of soda. Such frequently mentioned compounds as caffeine, nicotine, wood alcohol, mustard gas, nitroglycerine, citric

acid, cream of tartar, acetanilide, menthol, salvarsan, mercurochrome, formaldehyde. Such materials as gasoline, kerosene, rubber, collodion, celluloid, rayon, duco, turpentine, soap, glue, linseed oil, ethyl gasoline and such processes as decay, fermentation, rancidity, hardening of oils, tanning of leathers. Particular attention is given to carbohydrates, fats and proteins and their fate in digestion and metabolism.

Chem. s221. Organic Chemistry. Seven hours lecture with eight hours laboratory. Six credits. Prerequisite: General Chemistry. Mr. Williams. By arrangement. W. 102.

Chem. s231. Physical Chemistry. Five hours in classroom and five hours in laboratory each week. Four credits. Prerequisite: Chem. 113. Mr. Jordan. By arrangement. W. 114.

Fundamental principles of physical chemistry, careful consideration of the laws and theories, with reference to various branches of chemistry, and their application to industrial processes.

Chem. s344. Food, Nutrition and Diet. Five hours a week, three credits. Prerequisite: General Chemistry. Mr. Williams. By arrangement. W. 102.

The influence of vitamins, minerals, proteins, amino acids, carbohydrates, fat, fiber, flavor, color, enzymes, preservatives and stimulants on the body. Chemical and physical nature of carbohydrates, fats and proteins. Digestion and metabolism. Study of the proper diet. Flesh-forming and flesh-producing diets. Diet in disease. Sour milk therapy.

While human feeding is emphasized in this course, principles here discussed are applicable to the feeding of animals as well.

ECONOMICS

Econ. s102. Introduction to Economics. Five hours a week; three credits. Mr. Moen. 9 M. T. W. T. F. Pe. 109.

This course is the regular college one-term course required of all students in Engineering and is designed for those students who do not feel able to devote more than one term to the study of Economics, and also for teachers preparing to teach Economics in High Schools.

This is an elementary course in Economics. It treats of the business aspects and economic organization of society. It includes a study of the great fundamental economic laws which apply to all professions and occupations; a study of the production, distribution and value of economic goods, and a study of the institutions, agencies, and ideals which dominate, operate and control the manner, means, and methods of making a living.

Econ. s103. General Economics. Five hours a week; three credits. Mr. Forster. 8 M. T. W. T. F. R. 208.

This is the first term of the regular college course in General Economics.

An introduction to the general field of Economics. A study of economic institutions and the general principles governing the production and distribution of wealth under the existing economic organization.

Sections for F. W. S.

Econ. s112. Accounting for Engineers. Five hours a week; three credits. Mr. Shulenberger. 8 M. T. W. T. F. Pe. 3.

Required of students in the School of Engineering. Not open to students in Business Administration.

A survey of accounting and financial statements and records; their construction, their use and interpretation.

Econ. s201. Accounting I. Five hours a week; three credits. Mr. Shulenberger. 9 M. T. W. T. F. Pe. 3.

Required of all sophomores in Business Administration and Industrial Management.

A course in the theory and practice of accounting, covering the essential principles of accounting as applied to the several types of business organizations, giving interpretations of the structure, form, and uses of formal business statements such as Balance Sheets, Statements of Profit and Loss, etc.

Sections for F. W. S.

Econ. s210. Business Organization. Five hours a week; three credits. Mr. Shulenberger. 12 M. T. W. T. F. Pe. 3.

Required of seniors in Chemical and Highway Engineering.

Prerequisite: Econ. 102 or 103.

Forms of business enterprises, single enterprises, partnership, joint-stock company, corporation, and principles of business management.

Econ. s211. Business Law. Five hours a week; three credits. Prerequisite: Econ. 102 or 103. Mr. Moen. 10 M. T. W. T. F. Pe. 109.

Required of seniors in Business Administration, and in Ceramic, Chemical, Civil, Architectural, Electrical, and Mechanical Engineering, and teachers of commercial subjects. Elective for other students.

A general survey of the sources of law, fields of law, contracts, agency, sales, law of partnerships and corporation, negotiable instruments, bailments and carriers, personal property, suretyship and guaranty, bankruptcy, crimes in business.

Econ. s212. Statistical Method. Five hours a week; three credits. Elective Prerequisite: Economics 102. Mr. Forster. 10 M. T. W. T. F. R. 208.

A study of the elements of statistical methods, statistical types, collection and analysis of statistical data.

Econ. s217. Advertising. Five hours a week; three credits. Mr. Moen. 8 M. T. W. T. F. Pe. 109.

Principles and practice of advertising and its relation to the distribution and sales program.

Econ. s218. Sales Management. Five hours a week; three credits. Mr Moen. 12 M. T. W. T. F. Pe. 109.

Sales methods, planning and research. Administrative policy and organization of the sales force from the viewpoint of sales control.

Econ. s265. Farm Marketing. Five hours a week; three credits. Prerequisite: Economics 102. Mr. Forster. 9 M. T. W. T. F. R. 208.

A study of the economic principles underlying successful marketing of farm products, market organization and control, price-making forces, and critical examination of the present system of marketing farm products.

Econ. s269. Farm Accounting. Five hours a week; three credits. Mr. Forster. 11 M. T. W. T. F. R. 208.

This course deals with the practical aspects of farm accounting, such as preparation of inventories of farm property, simple financial statements,

method of keeping farm records, analysis of farm records, and the interpretation of results obtained from farm business transactions. Attention will also be given to methods of obtaining information on the business aspects of farming.

Econ. s361. Farm Organization and Management. Five hours a week; three credits. Mr. Forster. 12 M. T. W. T. F. R. 208.

In this course special consideration is given to the application of economic principles and statistical methods to the solution of farm management problems. For this purpose actual farm records on farms from various parts of the State are available. The course is primarily intended for those who have had General Economics and Statistics.

Econ. s366. Marketing Methods and Problems. Five hours a week; three credits. Mr. Forster. By arrangement.

This course will consist of a study of the major problems in the field of agricultural marketing. The problems related to prices and the marketing mechanism will be given special consideration. The course is designed primarily for those students who have had General Economics and the first course in Farm Marketing.

EDUCATION

Courses for Undergraduates

Ed. s101. Introduction to Psychology. Five hours a week; three credits. Mr. Garrison. 10 M. T. W. T. F. H. 3.

The human receiving, connecting, and reacting nervous mechanisms; human behavior; instinctive tendencies, reflexes, instincts, and capacities; emotional behavior; habit and habit formation; the learning process; memory; thought; individual psychology.

Ed. s201a. Educational Psychology. Five hours a week; three credits. Mr. Garrison. 9 M. T. W. T. F. H. 3.

This course will deal with psychological facts and theory and their application to educational practices. A study will be made of the human receiving, connecting, and reacting nervous mechanisms, the original equipment of man, reflexes, instincts, and capacities; emotional behavior; laws and nature of learning and of habit formation; economy in learning; transfer of training; work and fatigue; individual differences and intelligence.

Ed. s205. Introduction to Education. Five hours a week; three credits. Mr. Mayer. 11 M. T. W. T. F. Pu. 7.

This course is intended to introduce the college student to the problems of education. Some of the problems for consideration are: General and vocational education, the relation of the teacher, the school, and the community, materials and practices, the individuality in school children, educational systems at work, and measuring the outcome of teaching and learning.

Ed. s303. Problems of the High School Teacher. Five hours a week; three credits. Mr. Highsmith. Prerequisite: Twelve credits in Education. 9 M. T. W. T. F. Pe. 206.

This course will cover the State requirement with reference to supervision for a high school teacher. Topics and problems discussed will include: The aims of secondary education; the high school teacher, and the high school

pupil; discipline; classroom tecnique; training in habits of study; the curriculum; student rating; salaries; professional duties and responsibilities; school morale, and extra-curricular activities.

Textbooks, lectures, readings, and reports.

Ed. s305. Methods of Study. Five hours a week; three credits. Mr. Cook. Prerequisite: Twelve credits in Education. 11 M. T. W. T. F. Pe. 201.

A course for teachers in the methods of study and the technique of supervising study. Considers the factors of study, the chief difficulties, the general principles for improving study, and special devices. Teachers will have the opportunity of making special studies and reports on study procedures related to the subjects which they teach.

Ed. s315. Methods of Teaching Modern Languages. Five hours a week; three credits. Mr. Hinkle. Prerequisite: Eighteen credits in Modern Language, Educational Psychology, and Principles of Teaching. 10 M. T. W. T. F. Pe. 212.

The purpose of this course is to present the problems connected with the teaching of Modern Languages in such manner as to be of the maximum benefit to all Modern Language teachers as well as to language students who are preparing to teach. It includes discussions of the various methods and theories of language teaching; the aims in Modern Language instruction; organization of material; the subject-matter and apparatus of teaching, including such topics as textbooks, pronunciation, grammar, reading, literature, composition, vocabulary building, dictation, oral drill, examinations, tests, and extra-class activities.

Ed. s316. Teaching of Literature in Secondary Schools. Five hours a week; three credits. Mr. Owens. Prerequisite: Eighteen credits in English, Educational Psychology, and Principles of Teaching. 8 M. T. W. T. F. Pu. 101.

The purpose of this course is to discuss various methods of teaching English and American literature in high schools: assigning of lessons, conduct of recitations, reports on outside readings, consideration of literary productions recommended for study by high school students, survey of textbooks. Special consideration will be given to the books in literature which are listed in the North Carolina manual for secondary schools. Textbook assignments, reports, discussions, collateral readings, practice teaching.

Ed. s318. Teaching of Composition in Secondary Schools. Five hours a week; three credits. Mr. Owens. Prerequisite: Eighteen credits in English, Educational Psychology, and Principles of Teaching. 10 M. T. W. T. F. Pu. 101.

The purpose of this course is to discuss various methods of teaching composition and grammar in high schools: lesson assignments, class discussions and recitation, written exercises, grading of papers. A thorough examination will be made of the requirements in composition and grammar for the several years of the high school course. Textbook assignments, reports, discussions, practice teaching.

Ed. s320. Vocational Guidance. Five hours a week; three credits. Mr. Boshart. Prerequisite: Twelve credits in Education. 9 M. T. W. T. F. Pe. 12.

Treats of the problems of directing pupils in the study of occupations for the purpose of selecting satisfactory life work. It includes studies of the history

of occupational guidance and personnel administration, principles and practices in guidance and employment, compulsory school laws, child labor legislation, and forms and records essential for school use.

Ed. s321. Vocational Education. Five hours a week; three credits. Mr. Boshart. Prerequisite: Twelve credits in Education. 12 M. T. W. T. F. Pe. 12.

This course is organized especially for administrators, supervisors, principals, and teachers who have not had opportunity of working out the relationships governing vocational and general education. It will treat of the needs and place of vocational education in the public school system; practices in organization of vocational education and vocational guidance in trades and industries, home economics, and agriculture, including continuation schools, part-time and evening classes; and the problems related to administration of the Smith-Hughes Act.

Ed. s323. Study of Occupations. Five hours a week; three credits. Mr. Boshart. 10 M. T. W. T. F. Pe. 12.

Given especially for principals and school counselors who are aiding pupils in the selection of a life work, this course will be a study of the essential elements found in various occupations. Interviews with men and women in different lines of endeavor and visits to plants and offices will form a goodly part of the work which will be written up in form to present to students of high school or college grade. Readings, reports, discussions, and lectures by class members will include the following: importance in society, the kinds of work involved, advantages and disadvantages, what preparation is necessary, individual qualifications, together with matters of income and general environment.

Ed. s327. Standard Testing and Measuring. Five hours a week; three credits. Prerequisite: Twelve credits in Education or Senior Standing. Mr. Mayer. 8 M. T. W. T. F. Pu. 7.

This course will give the teacher an insight into the more common achievement, diagnostic, and mentality tests, and their use and interpretation from the standpoint of the teacher, supervisor, and administrator.

Ed. s328. Tests, Examinations, and Grading. Five hours a week; three credits. Prerequisite: Twelve credits in Education or Senior Standing. Mr. Mayer. 12 M. T. W. T. F. Pu. 7.

This course will deal with the principles and practices of building up and using classroom tests, and the principles underlying grading. (Teachers contemplating taking this course should bring textbooks that they are using in their High School Teaching.)

Ed. s335. Public School Administration. Five hours a week; three credits. This course is intended primarily for superintendents and principals. Prerequisite: Twelve credits in Education. Mr. Lockhart. 8 M. T. W. T. F. Pe. 208.

The following problems will receive consideration:

The powers and duties of the board of education; the powers and duties of the superintendent; the county-wide plan; consolidation of schools; transportation of pupils; school buildings and equipment; operation and maintenance of plant; janitor service; selection, purchase and distribution of supplies; school reports; problems pertaining to the teacher, pupil and home; educational problems of a county school system.

Textbooks, lectures, readings and reports.

Ed. s334. School Finance. Five hours a week; three credits. A practical course for superintendents and principals. Mr. Lockhart. 9 M. T. W. T. F. Pe. 208.

The topics treated will include:

Sources and distribution of school funds; budget making; school costs; bonds and the financing of capital outlays; accounting; financial statements and reports; business practice.

Prerequisite: General Economics and Public Finance. Six hours, twelve credits in Education. Textbooks, lectures, readings and reports.

Ed. s336. Problems in Secondary Education. Five hours a week; three credits. Prerequisite: Twelve credits in Education. Mr. Highsmith. 11 M. T. W. T. F. Pe. 206.

The purpose of this course is to give as practical assistance as possible to those men and women who wish to become high school principals in North Carolina. Frequent reference will be made to conditions in the State. The following problems will be discussed:

Aims of secondary education; the curriculum (with special reference to the North Carolina course of study and High School reorganization); standards for high schools; classification of pupils; control of pupils and discipline; regulation of attendance; guidance of pupils; classroom standards; examination: marking system; interpretation of intelligence scores; supervision of study; class schedule making; duties of the principals; supervision of instruction; selection of teachers; teaching load, salaries; professional ethics.

Textbooks, lectures, readings, and reports.

Ed. s338. Materials and Methods in Teaching High School Science. Prerequisites: Twenty credits in Science, Educational Psychology and Principles of High School Teaching, or Adequate Teaching Experience. Mr. Showalter. Pe. 204.

The first half of the work will be devoted to a detailed study of the content of one division of High School Science and the development of a unified concept of the entire Natural Science field.

During the second half the history of science and science teaching will be considered, a critical analysis of desirable objectives will be made, lesson planning, use of textbooks, sources and use of illustrative and other supplementary materials, collection and preservation of biological materials, laboratory plans, equipment, supplies, and techniques, use of materials and equipment available in home and community, construction and use of written examinations, notebooks, and professional helps will be studied.

Students may register for only one part, or may take both parts.

Ed. s338a. First Half—Three credits. 10 M. T. W. T. F.

Ed. s338b. Second Half—Three credits. 11 M. T. W. T. F.

Ed. s339. Materials and Methods in Teaching High School Geography. Five hours a week; three credits. Prerequisites: Educational Psychology and Principles of High School Teaching, or Adequate Teaching Experience. Mr. Showalter. 9 M. T. W. T. F. Pe. 204.

The work will begin with a detailed study of the subject-matter of High School Geography. A thorough analysis will be made of desirable objectives and the procedures, including both class and laboratory techniques, by means of which the learner may best attain these objectives. The use of atlases and

textbooks, the securing and use of suitable illustrative and other supplementary materials, and the use of the local environment and home-made apparatus will be given major emphasis.

Ed. s343. Methods of Teaching Mathematics. Five hours a week; three credits. Prerequisite: Twenty hours in Mathematics. Mr. Mock. 10 M. T. W. T. F. P. 203.

This course deals with the most modern techniques in teaching high school mathematics. It will partake largely of the nature of a professionalized subject-matter course.

Ed. s353. Theory of Industrial Arts in the Elementary School. Five hours a week; three credits. Prerequisite: Twelve credits in Education. Mr. Boshart. 8 M. T. W. T. F. Pe. 12.

A study of the value and place of Industrial Arts in the elementary school. The correlation of Industrial Arts with other school subjects; the methods of teaching and supervision, and the study of industries, with the view of selecting suitable projects for classroom use. Primarily for teachers and supervisors of the elementary schools.

Ed. s354. Practical Arts Problems. Ten hours a week; three credits. Prerequisite: Twelve credits in Education. Mrs. Leggette. 9-11 M. T. W. T. F. or 11-1 M. T. W. T. F. Pe. 11.

Treats of the selection and organization of suitable projects in Industrial Arts and the working out in detail of such as will meet the needs of the class. The meaning of Industrial Arts and the methods of making it a part of the regular work of the school will be discussed. For teachers in the elementary schools who have had teaching experience and who have not had special work in Industrial Arts.

Ed. s355. Art Studies in the Elementary School. Five or ten hours a week; one and one-half or three credits. Prerequisite: Twelve credits in Education. Mrs. Leggette. 9-11 M. T. W. T. F. Pe. 11.

A study of art work in the elementary school designed especially to aid teachers in making concrete applications in their classrooms.

Ed. s356. Clay Modeling for Public School Teachers. Five double periods; three credits. Additional work and credit if desired. Mr. Paulson. 9-11 M. T. W. T. F. P. & E. 208.

Work will consist of modeling, moulding, casting, glazing, and firing. Problems will be selected for use in elementary and secondary schools with varying degrees of equipment.

Ed. s357. Fine Arts for Teachers. Five double periods; three credits. Additional work and credit if desired. Mr. Paulson. 11-1 M. T. W. T. F. P. & E. 208.

Drawing in pencil, charcoal, crayon and water color from casts and from nature. Perspective theory and outdoor sketching. Lettering and poster design. Lectures in appreciation of art. Also individual instruction to advanced students.

Note: Students may, if they desire, divide their time between Practical Arts Problems, Ed. s354, and Clay Modeling for Public School Teachers, Ed. s356. The demand for more advanced work in the above mentioned courses will be satisfied when possible.

Ed. s360. Special Problems in Teaching Agriculture. Five hours a week; three credits. Prerequisite: Twelve credits in Education, including Special Methods of Teaching Agriculture. Mr. Cook. 9 M. T. W. T. F. Pe. 201.

This course is for graduates of the Department of Agricultural Education. It will consist of special individual problems and preparation of plans for the next year's work, involving a survey of the school and community in which they are to work the coming year. From this information each student will prepare a program of agricultural education especially adapted to his school and community. It will include classroom arrangements and fixtures, library equipment, gathering specimens and illustrative materials, and the organization of courses of study.

Ed. s371. Child Psychology. Five hours a week; three credits. Prerequisite: Twelve credits in education, six of which must be in Psychology. Mr. Garrison. 11 M. T. W. T. F. H. 3.

This course will consider the results of scientific studies of mental and physical growth from infancy to adolescence. It will emphasize the bearing of instinctive tendencies and social environment on development, the emotional life of children and special problems of behavior, with their application to the training of children in the home as well as in school.

Ed. s364. History of Education. Five times a week; three credits. Mrs. Wallace. 11 M. T. W. T. F. Pu. 8.

This course will include a brief study of European Education and its influence upon the American Public School, the early development of the elementary and high schools of America, and the present tendencies of our educational system. The period from 1890 to the present will be given special consideration.

Ed. s406. Philosophy of Education. Five hours a week; three credits. Prerequisite: Eighteen credits in Education, six of which must be in Psychology. Mr. Garrison. 8 M. T. W. T. F. H. 3.

This course is intended to follow a thorough course in The History of Education. The aim of this course is to develop the principles upon which a broad philosophy of education can be based. Historical reviews of philosophies in their bearing on education, from the time of Plato and Aristotle through the scientific movement of Spencer and others, will be made. The influences of these philosophies on the present day systems of education, its aim, scope, and organization, will be considered as they relate to each other and to the scheme of life.

Ed. s408. Supervision—The Improvement of Instruction. Five hours a week; three credits. Prerequisite: Eighteen hours in Education. Open to college graduates only. Mr. Highsmith. 10 M. T. W. T. F. Pe. 206.

For principals of High Schools, Heads of Departments, Supervisors and Teachers.

This course is offered to meet a growing demand for supervision of High School instruction. The purpose of Supervision is the improvement of instruction.

The problems involved in the supervision of teachers; the planning and organization of supervision; the functions of supervision; rating of principals, supervisors and teachers; classroom visitation and conferences; the improvement of teachers in the service.

Textbooks, lectures, readings, and reports.

Ed. s418. Mental and Aptitude Testing. Five hours a week; three credits. Mr. Garrison. 12 M. T. W. T. F. H. 3.

The first part of this course will be concerned with the history of mental and aptitude testing. The purpose of this course is to give the student a more thorough acquaintance with the types of tests used in measuring intelligence, aptitudes, attitudes and character traits. Reports on recent students in these fields are constantly assigned, and a great deal of the discussions are built around these.

Ed. s416. Problems in Agricultural Teaching. Five hours a week; three credits. Prerequisite: Eight credits in Education. Mr. Cook. 12 M. T. W. T. F. Pe. 201.

Investigations, reports, and a critical evaluation of present practices with constructive remedies. The content of the course will vary, according to the problems selected for study.

NOTE: COURSES FOR TEACHERS OF COMMERCIAL SUBJECTS.

Courses especially helpful are listed in the economics section and numbered Ec. 102, Ec. 103, Ec. 112, Ec. 201, Ec. 210, Ec. 211, and Ec. 212.

ENGINEERING

C. E. s105. Mechanics. Five hours a week; three credits. Prerequisite: Trigonometry and Analytics. Mathematics 103 and 104. Mr. Foster. 8 M. T. W. T. F. P. 106.

Statics, including concurrent forces, parallel forces, noncurrent forces; friction, centroids, moment of inertia, rectilinear motion, curvilinear motion, and rotation.

M. E. s102. Engineering Drawing. Ten or twenty hours a week; three or six credits. Required of Engineering Freshmen. Mr. Foster. 9-1 M. T. W. T. F.; 10-12 M. T. W. T. F. P. 106.

Drawing-board work, covering lettering, orthographic projection, auxiliary projection, isometric projection, cabinet projection, intersection and development, working drawings, and blue-printing.

M. E. s103. Descriptive Geometry. Ten hours a week; three credits. Mr. Foster. 10-12 M. T. W. T. F. P. 106.

This work covers the representation of geometrical magnitudes, by means of points, lines, planes, and solids, and the solution of problems relating to them.

M. E. s105. Woodshop. Five or ten hours a week; one or two credits. Mr. Wheeler. 2-4 M. T. W. T. F. Woodshop.

Use of bench tools, reading blue-prints, making cabinet joints, operation and care of wood-working machinery. Correct methods of staining, varnishing, filling and gluing.

M. E. s107. Mechanical Drawing. Four, seven or ten hours per week; one, two or three credits. Mr. Foster. By arrangement. P. 106.

Drawing-board work, covering machine fastenings, pipe fittings, elementary cams, technical sketching, working drawings, tracing and blue-printing.

M. E. s118. Machine Shop I. Ten hours a week; two credits. Mr. Wheeler. 9-11 M. T. W. T. F. Woodshop.

Required of Seniors in Chemical and Juniors in Ceramic and Mining Engineering.

Instruction in the use of hand and machine tools.

M. E. s130. Metal Work. Fifteen hours a week; three credits. Mr. Wheeler. 9-12 M. T. W. T. F. Woodshop.

Instruction will be given in elementary phases of metal work, including filling, chipping, drilling, bending and forming, and problems on the drill press, lathe, and shaper. Intended for teachers of general shops where metal work will be a part of the course offered.

M. E. s132. Woodworking for Teachers. Fifteen hours a week; three credits. Mr. Wheeler. 2-5 M. T. W. T. F. Woodshop.

Instruction will be given in bench-work, the use of wood-working machines, and the construction and finishing of projects suitable for wood-working classes in the junior and senior high schools. Special attention will be given to the problems of selecting suitable equipment and its installation.

M. E. s134. Mechanical Drawing for Industrial Arts and Vocational Teachers. Fifteen hours a week; four credits. Mr. Foster. By arrangement. P. 106.

Drawing-room practice twelve hours per week and recitation three hours per week. Lettering, instrument practice, othographic projection, drawing from objects, and intersections and developments will be studied. Working drawings of projects that may be used in shop work will be made. Drawing room fee $1.00.

ENGLISH

Eng. s101. Rhetoric and Composition. Five hours a week; three credits. Mr. Harrison. 10 M. T. W. T. F. Pu. 104.

For credit or to remove condition in first-year college English. A review of grammar in its practical application to writing and to speaking. The study of words: spelling, derivation, and the enlarged vocabulary. The principles of construction of the sentence, the paragraph, and the whole composition. An introduction to the forms of discourse: description, narration, exposition, and argument. Methods and objectives in teaching this subject. Frequent short exercises and one longer paper. Readings in class as drill in accurate interpretation and as models, and some collateral assignments. Individual conferences.

Eng. s130. Technical Writing. Five hours a week; three credits. Prerequisite: English 101. Mr. Harrison. 9 M. T. W. T. F. Pu. 104.

The principles of composition applied to the writing of reports and other engineering papers; illustrative readings; practice in writing frequent shop papers; a thesis as model of the paper to be presented for advanced degree, read before a scientific society, or published in a technical journal. Conferences.

Eng. s202. Advanced English Grammar. Five hours a week; three credits. Mr. Owen. 12 M. T. W. T. F. Pu. 101.

This course is designed to meet the needs of teachers who desire to get a more comprehensive knowledge of grammar than that furnished in the usual high school and college courses in grammar and composition. Teachers who feel that their preparation for teaching grammar and composition is inadequate should find in this course the means of learning purely technical grammar and in gaining a confidence in their own knowledge of the subject.

Methods of teaching the grammatical requirements in the high school English course of study will be stressed. Textbook assignments, written work, discussions, drills, and lectures.

Eng. s208. The Essay. Five hours a week; three credits. Prerequisite: English 101. Mr. Harrison. 11 M. T. W. T. F. Pu. 104.

Planned as a course in advanced composition and in appreciation of this important form of writing. Style and content of the literary, non-technical essay; various types of formal and informal essays to be read as models of structure, mechanics, and material; frequent brief practice papers and one longer essay. Conferences.

Eng. s235. Victorian Poetry. Five hours a week; three credits. Mr. Clark. 11 M. T. W. T. F. Pu. 105.

A study of the principal poets of the Victorian era. Emphasis will be placed on the works of Tennyson and Browning.

Eng. s237. The Development of the Drama. Five hours a week; three credits. Prerequisite: English 101. Mr. Clark. 8 M. T. W. T. F. Pu. 105.

In this study there will be a discussion of the origin, progress, and influence of the English and American drama, with particular attention to plot, characterization, and interpretation of certain readings which represent the various types of the drama.

Eng. s330. Shakespeare. Five hours a week; three credits. Prerequisite: Eng. 101 and three additional credits in English. Mr. Clark. 12 M. T. W. T. F. Pu. 105.

An analysis, as regards technique and interpretation, of the following dramas: Macbeth, Othello, The Winter's Tale, Twelfth Night, and King Henry the Fifth. Reports on parallel readings will be discussed in open forum sessions.

Eng. s332. The Romantic Period. Five hours a week; three credits. Prerequisite: Eng 101 and three additional credits in English. Mr. Clark. 9 M. T. W. T. F. Pu. 105.

A study of the representative poems of Gray, Blake, Burns, Wordsworth, Coleridge, Scott, Southey, Byron, Shelley, and Keats. These writers will be considered with the view of noting, as to content, their sympathy with nature and their interest in man and the affairs of human life; as to style, their departure from the conventional forms and devices of the Classical School.

Eng. s260. Public Speaking. Five hours a week; three credits. Mr. Owens. 9 M. T. W. T. F. Pu. 101.

A practical course for beginning students in extemporaneous speaking and for those who desire to learn how to judge intelligently the effectiveness of a public speech. The fundamentals aimed at are; thought conception, power of analysis, orderly arrangement of ideas, self-control before an audience, and an apt and forceful extempore presentation. Exercises and speeches are prepared and delivered by the students, a textbook is studied, and lectures and personal suggestions and criticisms are given by the instructor. Some attention is paid to the development of the effective speaking voice.

Eng. s271. See Education s316.

Eng. s273. See Education s318.

Eng. s337. Contemporary Literature. Five hours a week; three credits. Mr. Harrison. 8 M. T. W. T. F. Pu. 104.

An introduction to present-day writers of England and America. An effort to understand and to interpret the literature of the period as reflecting its intellectual and spiritual life. Poetry, prose fiction, biography, essays.

GEOLOGY AND PHYSICAL GEOGRAPHY

Geol. s101. Earth History. Five hours a week; three credits. Mr. Stuckey. 9 M. T. W. T. F. W. 104.

Open to both college students and teachers who are interested in a better understanding of the world about them.

An introductory course in general geology dealing with the changes which have taken place in the earth and the physical and life processes which have brought about these changes. The first half of the course deals with the processes of physical and dynamical forces while the second half deals with the historical development of the earth as it has been affected by those forces and by life processes.

Geol. s105. Physical Geography. Three lectures; four hours laboratory and field work; three credits. Equivalent to the regular course in physical geography given in the third term of the college year. Mr. Stuckey. 10 M. T. W. T. F. W. 104.

The course is intended to give those interested in general science and in teaching a better appreciation of physical geography. It will include an account of the earth as a planet; the atmosphere; the development of winds and rain; changes in the earth's crust; and the development of relief features and physiographic provinces.

The work of running water, ground water, wind, snow and ice, and forces within the earth as they affect the relief features will be taken up in some detail.

The course will also include a brief consideration of the physical geography of North Carolina.

Geol. s120. Physical Geology. Three lectures; four hours laboratory work; three credits. Mr. Stuckey. 11 W. T. F.; 2-4 M. W. W. 104.

An introductory course in dynamic and structural geology. The course treats of the forces which are acting in and on the earth, and the materials of the earth's crust.

Geol. s291. Geology of North Carolina. Three lectures; four hours laboratory; three credits. Mr. Stuckey. 12 M. W. F. Laboratory by arrangement. W. 104.

Elective for students in the Schools of Engineering and Science and Business who have had Geol. 101 or 120.

Also open to teachers who are interested in the geology of North Carolina and who may be interested in helping students to collect and assemble groups of the common rocks and minerals from different sections of the State.

The course will cover the physical geography, general geology, common rocks and minerals, and mine and quarry products of the State.

HISTORY

Hist. s101a. American Economic History. Five hours a week; three credits. Mr. Barnhardt. 10 M. T. W. T. F. Pu. 6.

Discovery, colonization, economic background of the Revolution, government foundations, wars, presidential administrations, public lands, public finance, agriculture and industry.

Hist. s101c. Commercial Geography (Commercial and Industrial.) Eight hours a week; four credits. Mr. Moen. 11 M. T. W. T. F. Pe. 109.

This course is designed to prepare teachers of geography in the high schools as provided for in the plan of High School Reorganization as well as for students in the School of Science and Business. Geographical conditions affecting industries production and commerce of the world; development and relations of commercial areas to location and availability of resources; markets and transportation routes.

Hist. s201b. Modern European History. Five hours a week; three credits Mr. Barnhardt. 9 M. T. W. T. F. Pu. 6.

The political and social history of Europe from 1789 to 1870. A survey of the French Revolution and Napoleon; the era of Metternich; democratic reforms and revolution; the Industrial revolution; and the growth of nationalism to 1870.

Hist. s302. Recent U. S. History. Five hours a week three credits. Prerequisite: History 101. Mr. Barnhardt. 8 M. T. W. T. F. Pu. 6.

The Civil War, reconstruction, development of West and South, transportation, rise of big business and organized labor, political parties, movements for reform, the free silver movement, war with Spain, American expansion, rise of the Progressive Party, Roosevelt, Taft and Wilson; the World War and problems of Reconstruction, the Harding-Coolidge administration.

Hist. s303. History of North Carolina. Five hours a week; three credits. Prerequisite: History 101. Mr. Barnhardt. 12 M. T. W. T. F. Pu. 6.

The purpose of this course is to give the teachers of North Carolina and others a general view of the political, economic, and social development of North Carolina from colonial beginnings to the present day. A brief survey will be made of the settlement of North Carolina, the various racial groups which colonized agriculture, industry, and commerce in the colonial era, and the relations of the province to England. A more detailed study will be made of North Carolina between the Revolution and the Civil War, emphasis being given to North Carolina and states' rights, social conditions, slavery and the free negro, agriculture and industry, and the beginnings of public school education. Particular emphasis will be placed on the recent development of the state, the rise of textile, tobacco, and other industries, the development of agriculture, public schools and higher education, good roads, and other factors in recent North Carolina progress.

MATHEMATICS

Math. s101. Algebra. Ten hours a week; five credits. Prerequisite: Algebra to Quadratics and Plane Geometry. Mr. Mumford. 11-1 M. T. W. T. F. P. 101 B.

This course includes the progressions, binomial theorem, undetermined coefficients, logarithms, compound interest and annuities, permutations, combinations, the general theory of equations, the solution of higher equations, etc.

Math. s102. Solid Geometry. Ten hours a week; five credits. Prerequisite: Plane Geometry. Mr. Mock. 11-1 M. T. W. T. F. P. 203.

The three books of Solid Geometry, including numerous original exercises, are covered in this course.

Math. s103. Plane Trigonometry. Ten hours a week; five credits. Prerequisite: Algebra through Quadratics and Plane Geometry. Mr. Fisher. 8-10 M. T. W. T. F. P. 209.

Definitions of the trigonometric functions, derivation of formulæ, solutions of plane triangles, solutions of many practical problems, etc.

Math. s104. Analytical Geometry. Ten hours a week; five credits. Prerequisite: Mathematics 101, 103. Mr. Mumford. 8-10 M. T. W. T. F. P. 101 B.

Loci of equations, the straight line, circle, parabola, ellipse, hyperbole, and the general equation of the second degree.

Math. s201. Differential Calculus. Ten hours a week. Five credits. Prerequisite: Mathematics 104. Mr. Mock. 8-10 M. T. W. T. F. P. 203.

An elementary course on the fundamental principles of the Calculus, including the development of the formulæ for differentiation with their applications to problems in rates, maxima and minima, etc.

Math. s202. Integral Calculus. Ten hours a week; five credits. Prerequisite: Mathematics 201. Mr. Fisher. 11-1 M. T. W. T. F. P. 209.

Development of formulæ for integration and their application to definite integrals, areas under curves, lengths of curves, volumes of solids, centers of gravity, centers of pressure, and moments of inertia.

Math. s343. Teaching of Mathematics. See Education s343. 10 M. T. W. T. F. P. 209.

*MODERN LANGUAGES

French

Mod. L. s101. Elementary French. Five hours a week; three credits. Mr. Ballenger. 8 M. T. W. T. F. Pe. 211.

This course is intended for students who have had little or no previous knowledge of French. It consists of reading and translations with the elements of grammar. Practices in the pronunciation and understanding of French is given by means of dictation and oral practice. Text: Olmstead's First Course in French.

Mod. L. s104. French Prose. Five hours a week; three credits. Mr. Hinkle, Mr. Ballenger. 9 M. T. W. T. F. Pe 212.

This course consists of readings and translations based upon selections from Malot, Hugo, Dumas, Daudet, and De Maupassant. Rapid reading and sight translation are stressed. The class work is supplemented by lectures and reports in such a way as to give a general survey of French literature.

Mod. L. s208. Conversational French. Five hours a week; three credits. Mr. Ballenger. 11 M. T. W. T. F. Pe. 211.

This course is essentially a practice course in French Pronunciation. Much attention is given to use of idiomatic construction and to training the ear to understand the spoken language. Its aim is to acquaint the student with the ordinary usages of the language.

* Courses in this department may be taken for double credit with the consent of the teacher concerned and the approval of the Director of the Summer School.

Mod. L. s303. Scientific French. Five hours a week; three credits. Mr. Hinkle. 12 M. T. W. T. F. Pe. 212.

This is an intensive reading course in general scientific literature. A study of scientific terminology is made and attention is given to the acquisition of a scientific vocabulary.

Mod. L. s310. French Civilization. Five hours a week; three credits. Mr. Hinkle. 9 M. T. W. T. F. Pe. 212.

This course is primarily a reading course on topics dealing with the development of French civilization and literature. The reading material in the texts used is supplemented by lectures on French manners and customs. The work is conducted in such a way as to increase facility in the use of narrative French and at the same time develop an accurate concept of the nature of present-day France.

German

Mod. L. s102. Elementary German. Five hours a week; three credits. Mr. Hinkle. 10 M. T. W. T. F. Pe. 212.

This course is intended for students who have had little or no previous training in German as well as those who may wish to review the elements of German grammar and pronunciation. It consists of reading and translation with the elements of grammar. Practice in the pronunciation and understanding of German is given by means of dictation and oral practice. Text: Bacon's German Grammar.

Mod. L. s105. German Prose. Five hours a week; three credits. Mr. Hinkle. 10 M. T. W. T. F. Pe. 212.

This course consists of readings and translations based upon representative German authors. Reading and sight translations are stressed. The class work is supplemented by lectures and reports in such a way as to give a general survey of German literature.

Mod. L. s304. Scientific German. Five hours a week; three credits. Mr. Hinkle. 11 M. T. W. T. F. Pe. 212.

This is a reading translation course in scientific German literature. A great deal of attention is given to the study and analysis of German scientific constructions, and a basis is laid for the development of a scientific vocabulary. Open to students who have had two years high school German or one year of college German. Text: To be selected.

Spanish

Mod. L. s103. Elementary Spanish. Five hours a week; three credits. Mr. Hinkle. 12 M. T. W. T. F. Pe. 212.

This course is intended for students who have had little or no previous training in Spanish. It consists of reading and translation with the elements of grammar. Practice in the pronunciation and the understanding of Spanish is given by means of dictations and oral practice. Text: Olmstead's *First Course in Spanish.*

Mod. L. s106. Spanish Prose. Five hours a week; three credits. Mr. Hinkle or Mr. Ballenger. 9 M. T. W. T. F. Pe. 212.

This course consists of readings and translations based upon representative Spanish authors. Reading and sight translations are stressed. The class work is supplemented by lectures and reports in such a way as to give a general survey of Spanish literature.

Mod. L. s209. Conversational Spanish. Five hours a week; three credits. Mr. Hinkle. 1 M. T. W. T. F. Pe. 212.

This course is essentially a practice course in Spanish pronunciation. Much attention is given to the use of idiomatic construction and to training the ear to understand the spoken language. Its aim is to acquaint the student with the ordinary usages of the language.

Mod. L. s215. (See Education s315.)

Mod. L. s311. Spanish Civilization. Five hours a week; three credits. Mr. Hinkle. 9 M. T. W. T. F. Pe. 212.

This course is primarily a reading course on topics dealing with the development of Spanish civilization and culture. The reading material in the texts used is supplemented by lectures on Spanish manners and customs. The work is conducted in such a way as to increase facility in the use of narrative Spanish and at the same time develop an accurate concept of present-day Spain.

NOTE.—Students registering for this course with the intention of teaching French are advised to register also for Conversational French and French Prose or French Civilization. Students registering for this course with the intention of teaching Spanish are advised to register also for Conversational Spanish and Spanish Prose, or Spanish Civilization.

PHYSICS

Physics s110. General Physics. Four or eight credits. Five hours class work, one 2½ hours laboratory each week for four credits. Double this for eight credits. Mr. Dixon. 9 M. T. W. T. F.; 11-1 Tu. 9-11 M. T. W. T. F.; 11-1 T. T. P. & E. 212.

Since Physics has become a required subject in the high school curriculum there have not been found enough teachers who can teach it and some other science. This course has been designed especially to help supply this demand, giving a teacher a good general survey of the whole field. The course will be given by well demonstrated lectures, textbook study, and laboratory work. Emphasis will be placed on practical elements of the scientific life and activity of today and the general ideas of the nature of things as revealed by recent research. The subject matter of the course is divided into five sections. General machines and force action will be the first section, heat and weather phenomena the second, sound and the physical basis of music the third, light and color the fourth, and electricity and its applications the fifth. One may take the class work without the laboratory, but it is recommended that students register for both.

As the course also carries college credit and some may desire to take only the second half, the first lecture each day will be given to the sections of the subject numbered one to three, as indicated above, while the second lecture each day will be devoted to covering sections four and five. One afternoon laboratory will be given to each half of the subject each week.

Physics s104. Five or ten credits. Mr. Dixon. 8 M. T. W. T. F.; 2-4 M. W.; 8-10 M. T. W. T. F.; 2-4 M. T. W. T. F. P. & E. 212.

An advanced treatment of General Physics. First, second, or third terms work may be taken or any two terms taken simultaneously.

Graduate courses in physics will be given if there is sufficient demand.

Physics s411. Research.

PHYSICAL EDUCATION

NOTE.—Summer School students are very desirous of getting in Coaching Courses but find it difficult to schedule them in addition to other required subjects. The Coaching Courses of the regular term have been combined, to make it possible for students to get instruction in all the major sports if they so desire. These classes meet daily, each sport covering one half the summer term.

P. E. s112. Theory and Practice Football Coaching. Three hours theory, one hour practice; two credits. Mr. Miller. By arrangement. Gym.

This course will cover the equipment, schedule making, rules, individual position play, offensive and defensive team play, individual technique, team strategy, training and conditioning.

P. E. s113. Theory and Practice Basketball Coaching. Three hours theory, one hour practice; two credits. Mr. Miller. By arrangement. Gym.

This course will cover the equipment, schedule making, rules, individual technique, offensive systems, defensive systems, training and conditioning.

P. E. s114-115. Theory and Practice Track and Baseball Coaching. Five hours theory, one hour practice; three credits. Mr. Miller. By arrangement. Gym.

Track will be covered the first half of the term. The equipment, rules, individual technique, practice organization, administration of meets will be thoroughly discussed and opportunity given for practical demonstration. Baseball will be covered the last half of the term covering individual technique in all fundamentals of individual play, offensive and defensive baseball.

P. E. s117. Physical Education and Recreational Programs. Three hours theory, one hour practice; two credits. Mr. Miller and Miss Nash. By arrangement. Gym.

This course is designed to aid those teaching in smaller high schools and grades to meet the demand made of them in assisting in the physical education programs of their school. Both the formal work consisting of calisthenic drill, marching, dancing, and apparatus work and the informal work consisting of group games, sports and efficiency tests will be covered. The organization and the administration of the class work will be stressed. Mr. Miller will teach the men's section in this course and Miss Nash will teach the women's section.

POULTRY SCIENCE

Poul. s302. Poultry Nutrition. Six weeks course; three credits. Mr. Dearstyne. 8 M. T. W. T. F. R. 205.

This covers the field of poultry nutrition including poultry physiology of digestion, absorption, metabolism, elimination of waste, requirements of animal and vegetable proteins and of fats and carbohydrates; mineral requirements for the body function and body growth, vital elements, deficiency of feed stuffs, digestibility and nutritive ratio for different feeding purposes, a discussion of grains and mill by-products, animal feeds, green feeds, mineral supplements, feed stuffs that are injurious, spoiled and diseased, rations and methods of feeding laying hens, for growth, fattening, breeding stock, handling layers under artificial lights. Estimate possible production. Feeding turkeys, ducks, geese and pigeons.

Poul. s304. Poultry Diseases. Five hours a week for six weeks; three credits. Mr. Kaupp. 10 M. W. F.; 2-4 M. W. R. 205.

Three one-hour recitations and two two-hour laboratory periods a week. Medical parasitology, poultry plant problems and control. Systematic study of non-contagious and contagious diseases and practical means of control. Serotherapy, vaccination and agglutination tests as applied in poultry disease control work. Autopsies and means of recognition of disease and laboratory technique on the detection of the presence of contagious diseases.

Poul. s315. Laboratory Diagnosis. Six weeks course; three credits. Mr. Dearstyne. 10 M. T. W. T. F. R. 205.

Poultry diseases; autopsies studied in gross pathological changes produced by disease. Identification by laboratory studies of disease producing organisms affecting the domestic fowl; artificial infection for diagnostic practice, including clinical, hematological and respiratory studies. Parasitic diseas s and the life cycle of intestinal and other parasites. Study of infection cycles of contagious diseases. Prophylactic principles as applied to prevention of contagious diseases in the domestic fowl.

Poul. s408. Graduate Seminar. Three credits. Mr. Dearstyne.

SOCIOLOGY

Soc. s102. Introductory Sociology. Five hours a week; three credits. Mr. Winston. 10 M. T. W. T. F. Pu. 8.

This course offers an inductive introduction to the field of Sociology by taking up a number of social problems which are already somewhat familiar to every one. These problems confronting every community and our general citizenry. The outstanding problems to be considered are: poverty, crime, divorce, immigration, population and race problems. This course, therefore, is a natural introduction to the Sociology Courses, which deal more directly with social theory.

Soc. s103. General Sociology. Five hours a week; three credits. Mr. Winston. 9 M. T. W. T. F. Pe. 108.

Required of sophomores in Business and Agricultural Administration and of juniors in Industrial Management. Elective for others in School of Science and Business.

A general survey of the field of Sociology. The course deals first with the basic principles of sociology, then analyzes general social organization.

Soc. s301. Social Pathology. Five hours a week; three credits. Prerequisite: Soc. 103 and 6 additional term-credits in Sociology. Mr. Winston. 10 M. T. W. T. F. Pe. 108.

This course gives primary attention to the outstanding pathological problems of our social life—laying special emphasis upon poverty, relief work and other social mal-adjustments.

Soc. s302. Sociology of City Life. Five hours a week; three credits. Prerequisite: Soc. 103 and 6 additional term-credits in Sociology. Mr. Winston. 11 M. T. W. T. F. Pe. 108.

The problems arising from the growth of modern town and city life. City planning in regard to social and industrial progress.

Soc. s307. Race Relations. Five hours a week; three credits. Prerequisite: Soc. 103 and 6 additional term-credits in Sociology. Mr. Winston. 12 M. T. W. T. F. Pe. 108.

The race problem in America and other countries. Social, economic, educational status of racial groups. Racial attitudes. A consideration of the importance of the race problem in our national life.

Soc. s311. Rural Sociology. Five hours a week; three credits. Prerequisite: Soc. 103 and 9 additional term-credits in Sociology.

Mr. Anderson. 12 M. T. W. T. F. Pe. 108.

Required of juniors in Agricultural Administration. Elective for others.

Rise of rural problems, ideals for rural life, factors aiding or hindering social conditions, improvements.

TEXTILES

Tex. s1. Yarn Manufacture. Special course for Mill Men. Mr. Hilton. By arrangement. Textile Building.

This subject will be divided into picking, carding, and spinning. It has been designed to meet the needs of young men working in cotton mills. The course will consist of lectures and practical work on machines in order that a man may specialize on any one or all the subjects and spend his whole time in the Textile School. Lectures will be given at specified hours, and the remaining time will be spent with practical demonstration.

Tex. s2. Loom Fixing, Designing, Fabric Analysis, and Calculations. Special courses for Mill Men. Mr. Nelson, Mr. Hart. By arrangement. Textile Building.

The subjects taught will be plain, drop box and fancy loom fixing. Elementary designing will be given as well as designing for special fabrics, such as leno. Starting up warps and fixing looms for fine and fancy fabrics will be demonstrated in connection with the operation of the looms. Lectures will be given to coördinate the theoretical with the practical. Any or all subjects may be studied. A mill man desiring to spend his whole time in the Textile School will be permitted to do so.

Tex. s102. Yarn Manufacture I. Two or four credits. Mr. Hilton. By arrangement. Textile Building.

Mixing of cotton. Openers, Pickers, Cards, Drawing Frames. Description and setting of different parts. Calculations for production, speeds, and drafts. Mechanical and electrical stop motions, and weighing of rolls.

Tex. s103. Power Weaving. Two or four credits. Mr. Nelson, Mr. Hart. By arrangement. Textile Building.

Operation of plain and gingham looms. Construction of auxiliary motions on plain looms. Cams and their construction. Automatic looms, construction and operation. Pattern chain building for gingham looms. Construction and value of pattern multipliers. Timing of drop-box motion, and other studies.

Tex. s115. Textiles for Teachers. Five hours a week; three credits. Mr. Nelson. 8 M. T. W. T. F. Textile Building.

This course is designed to give a fundamental knowledge of fabrics. It will include a study of various fabrics and their selection and adaptability to different uses. Various methods of distinguishing fabrics made from different materials such as cotton and rayon, cotton and wool, wool and silk, and other

combination of yarns will be given and analysis made of the fabrics. In addition, a general survey of the various processes through which cotton passes in its transition from the raw material to the finished product will be studied.

Tex. s201. Yarn Manufacture II. Two, four or six credits. Mr. Hilton. By arrangement. Textile Building.

Construction of sliver lapper; ribbon lapper; comber; description and setting of different parts; care of machines; fly frames; builder and differential motions; roll setting; calculations for draft, twist, lay, tension, speed, and production.

Tex. s202. Dobby Weaving. Two, four or six credits. Mr. Nelson, Mr. Hart. By arrangement. Textile Building.

Preparation of warps for weaving fancy patterns on dobby looms; drawing warps in harness; starting up warps in looms; construction and fixing single and double index dobby, also dobby for weaving border patterns; springs and spring boxes for harness; pattern-chain building; calculations for heddles, weight of fabrics, loom production.

Tex. s203. Fabric Design and Analysis. Two, four or six credits. Mr Hart. By arrangement. Textile Building.

Construction of fancy weaves, such as broken twills, curved twills, entwining twills, granite weaves. Imitation leno; honeycomb weaves; fabrics backed with warp or filling; fabrics ornamented with extra warp or filling; combining weaves together to produce new patterns.

Analyzing samples of fancy fabrics for design, drawing in draft, reed and chain plan. Calculating particulars to reproduce fabric from data obtained from sample.

W. & D. 402. Textile Fabrics: Their qualities and uses. Five hours a week; three credits. Mr. Nelson. By arrangement. Textile Building.

Analysis and illustrations of standard, fancy and novelty fabrics. Determination of fabric content. Construction of fabrics. Determination of quality in fabrics. Common defects in fabrics and their causes. Methods of testing fabrics for strength, elongation and durability.

ZOOLOGY

Zool. s101. General Zoology. Four recitations, eight hours laboratory: four credits. Mr. Snyder. 8 M. T. W. T.; 2-4 M. T. W. T. Z. 9.

An elementary study of animals, with special reference to the vetebrates and the more important economic groups, is given by textbook, laboratory, and field work, with supplementary lectures. This course is designed to give the student a general knowledge of the animal kingdom.

Zool. s103. Ornithology. (Bird Study). Four recitations, eight hours laboratory; four credits. Prerequisite: Zool. 101. Mr. Snyder. 9 M. T. W. T; 2-4 M. T. W. Z. 9.

This course consists of lectures, laboratory and extensive field work, devoted to the identification and economic study of North Carolina bird life.

Zool. s400. Graduate courses will be given if requested.

APPLICATION FOR ADMISSION

TO

STATE COLLEGE SUMMER SCHOOL

Name in full_____

Home Address: P. O._____, R. F. D._____

County _____, State_____

Courses desired_____

_____

Are you a high school graduate?_____; Have you attended any other college?_____

Name _____

In case of sickness notify_____

Do you expect to occupy a dormitory room?_____

Church preference _____

Date of application_____

(As soon as you decide to attend State College Summer School, please fill out above blank and mail to the Director.)

STATE COLLEGE RECORD

VOL. 31 MARCH, 1931 No. 3

Summer School

JUNE 15—JULY 24, 1931

Announcement of Courses

North Carolina State College
of
Agriculture and Engineering

STATE COLLEGE STATION
RALEIGH, N. C.

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Address official communications to
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State College Station
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SUMMER SESSION, 1931

The eighteenth Summer Session of the North Carolina State College of Agriculture and Engineering, which begins Monday, June 15th, and closes Friday, July 24th, has broadened considerably its instruction, particularly by offering additional courses. In the courses given, the work will be directed primarily to the needs of teachers in secondary education. The usual technical courses will also be offered, as well as courses for teachers of Industrial Arts who hold a certificate of Grammar Grade C or higher.

In addition to the subject-matter courses open to all students who have graduated from high school and particularly suitable for those persons preparing to teach in the secondary schools, there will be courses in the methods of teaching the various high school subjects. There will be offered advanced courses in the field of education, dealing with Philosophy, History of Education and Psychology. The purpose of these is to build upon the several courses in Education that have been given heretofore and which will be repeated in 1931.

The State College Summer School is desirous of using its faculty and laboratories, which are particularly well prepared and equipped in the scientific and technical fields, to meet the rapidly developing needs of the State. The Summer School is, however, making ample provision for those persons who want training in the advanced academic subjects, and is providing the best of instruction in the Liberal Arts studies.

HIGH SCHOOL PRINCIPALS AND SCIENCE TEACHERS

There will be offered for principals and teachers of high schools, both professional and subject-matter courses. Special courses in methods of teaching high school science, together with courses in the various physical sciences, will occupy a large place in the Summer School. This is made necessary by the demand throughout the State for professionally trained teachers of science in the secondary schools.

Dr. J. Henry Highsmith, Director, Division of School Inspection State Department of Public Instruction, and Mr. John C. Lockhart, Superintendent of Wake County Schools, will have charge of the general courses for superintendents, high school principals, and teachers. Professor M. F. Showalter will give the courses in special methods for high school teachers. An effort will be made to help the teachers in the planning of laboratories for high school science and in the proper use of laboratory equipment. Teachers planning to take the science courses are requested to bring their high school texts.

AGRICULTURE

A six-weeks course in professional and technical subjects will be given for the teachers of agriculture. It is designed for both the teachers already in service, and for prospective teachers of agriculture in the vocational schools. A three weeks course including both professional and subject-matter classes will be given especially for teachers of vocational agriculture now in service. The courses serve to keep teachers informed of new developments as well as to count toward advanced degrees.

COTTON CLASSING

The courses in Cotton Classing are arranged to instruct the producer in grading staple, to induce him, in consequence, to try to grow cotton of better staple, and to aid him in selling his product to better advantage. They are

open also to buyers of cotton. The courses are arranged for young and middle-aged men, and are not intended for boys, nor for men who lack earnestness of purpose. There are no entrance requirements for the Cotton Classing courses except that the applicant should have a good English education.

INDUSTRIAL ARTS

During the Summer School emphasis will be given to the preparation of teachers of industrial arts for the various communities of North Carolina. The rapid growth of industrial education in our State is creating a demand for supervisors and teachers who are competent to develop it in the right direction. Courses will be given in shop practice, mechanical drawing, methods of teaching, subject-matter, and administration.

Supervisors and teachers are needed for the work in the junior and senior high schools, part-time and continuation schools, and evening schools. The need is for those who are familiar with both general and vocational education and are capable of placing the proper emphasis on the courses to be outlined for a particular locality.

Industrial arts education depends largely upon the soundness of the philosophy concerning the type of training which underlies the introduction of industrial studies. For this reason those professionally minded teachers with vision will welcome courses giving them a better basis for their work in the classroom.

Courses in Textiles designed for men who are employed in the manufacturing plants, as well as courses for teachers who are employed in the textile communities, will be given. These courses will be arranged on a unit basis in order to meet the needs of the various groups who may wish to come to the College for different periods.

INDUSTRIAL ARTS FOR ELEMENTARY TEACHERS

The purpose of the courses in Industrial Arts for the Elementary School is to create interest in these problems using them to motivate the Elementary School subjects and to prepare teachers and supervisors who will become leaders in introducing this work in their school systems. Credit for these courses may be used either in raising or renewing certificates. The courses will be open only to those who hold a Primary or Grammar Grade C Certificate or one of higher grade.

Teachers desiring to raise or renew their certificates will take the first two of the courses in the list following, and one course selected from the remainder of the list.

Ed. s353. **The Theory of Industrial Arts in the Elementary School.** Five hours a week; three credits.

***Ed. s354.** **Practical Arts Problems.** Ten hours a week; three credits.

Tex. s115. **Courses for Teachers.** Four hours a week; two credits.

Ed. s201a. **Educational Psychology.** Five hours a week; three credits.

Ed. s327. **Standard Testing and Measuring.** Five hours a week; three credits.

Ed. s328. **Tests, Examinations, and Grading.** Five hours a week; three credits.

Ed. s320. **Vocational Guidance.** Five hours a week; three credits.

***Ed. s355.** **Art Studies in the Elementary School.** Ten hours a week; 1½ or 3 credits.

NOTE.—The above courses are described elsewhere in this bulletin.

* A fee of $1.00 will be charged those taking Ed. s354 and Ed. s355 to pay for the materials used.

PHYSICAL EDUCATION AND COACHING

The Summer School will offer opportunity for coaches and teachers of physical training to take specialized courses in the Department of Physical Education. The courses in athletic coaching and physical training are arranged especially for instructors already engaged in teaching during the regular school year and for others who wish to supplement the preparation they may have received in college. The courses take up the more important problems of coaching, and are designed for the purpose of fitting men more completely to take charge of athletics and physical training in schools and colleges throughout the country, and for fitting women to coach basketball, and direct physical training programs.

Leaders in education now recognize the fundamental need of athletics as an important part of any broad educational program. The demand for competent teachers, supervisors, and directors far exceeds the supply. This is especially true in case of men qualified both in coaching and in conducting classes in physical training. Our schools are seeking men who are college trained to take charge of their athletics; men who are versed in all phases of athletic coaching and administration. Approximately thirty states in the Union now have adopted legislation making physical education a prescribed part of the elementary and secondary school program.

RECREATION

There will be supervised recreation, consisting of tennis tournaments, baseball, volleyball, basketball and handball. Instruction in swimming will be provided for both men and women. The new swimming pool, lockers and showers, and other gymnasium facilities will be available to all students.

GRADUATE STUDIES

Practically all of the departments of instruction at the College that are offering undergraduate work during the Summer School will also offer graduate work. Persons who have completed their undergraduate work and desire to continue toward an advanced degree may do one-half term's work by pursuing graduate studies during the six-weeks Summer School. Special provision will be made to pursue *in absentia* graduate work started at the College during the Summer School. Credit will be given for this work done away from the College, provided it is arranged and registered for. In special cases, a student may continue work at the College or in the field for the whole summer and receive a full quarter's credit.

COLLEGE CREDIT

Beginning with 1924-1925, the regular session of State College was divided into three terms; consequently "credit," as used throughout this bulletin, refers to term credit, or twelve weeks work, unless otherwise designated. Therefore, in order for the college-credit courses to count for a full term's work, they will be given, if for five credits, ten periods a week; if for three credits, five periods a week. Since, however, no student will be allowed to take more than eighteen hours of work per week without special permission, this restriction will prevent a student's taking more than one ten-period course.

Thirty days of work during the six weeks will be accepted for a term's work if all the requirements of the course are met. This includes one day for registration and one day for examination.

The courses for college credit are open to graduates of standard high schools, and to others of equal qualifications. These courses give college students the opportunity to remove conditions, so that they may enter their

classes in the fall in full standing. They will also make it possible to secure advanced credit. The college-credit courses are also open to teachers who hold standard State certificates.

All professional courses offered will have value both for teachers' certificates and for college credit. The subject-matter courses may be counted by teachers for academic credit towards securing or raising their certificates.

PROVISION FOR BOTH MEN AND WOMEN

All courses are open to both men and women. Special accommodations in the dormitories are provided for the women, and special attention will be given to their comfort and welfare.

ACCOMMODATIONS FOR WOMEN

The fifth and sixth dormitories will be set apart for women in attendance upon the Summer School and will be under the supervision of Mrs. Verona Hoggard who has served so efficiently for several summers.

The variety of courses offered during the State College Summer School should appeal not only to those women in the teaching profession, but to those who are interested in taking advantage of these courses in preparation for other vocations and leading toward a college degree. Young women living in Raleigh who are working for a college degree should take advantage of this opportunity.

EDUCATIONAL FORUM

An open forum for discussion of timely subjects in the several larger fields of study in the college will be conducted for the benefit of Summer School students. These meetings will consist of an opening lecture by a recognized leader in his field, followed by a period of round table conference. These meetings will be as frequent as the attendance and interest will warrant.

SOCIAL FEATURES

A reception for students and faculty, followed by other social and recreational events such as week-end picnics and excursions, serve to foster a congenial spirit in the student body as well as to keep students physically and mentally fit for efficient study.

FEES AND EXPENSES FOR SIX-WEEKS STUDENTS

All fees and other charges are payable in advance or upon registration, and all checks should be payable to N. C. State College.

Registration	$12.50
*Tuition (except for teachers)	10.00
Classroom and Laboratory Maintenance Fee	5.00
Room Rent, each person (two or more in room)	7.50
	$35.00

*FREE TUITION FOR TEACHERS

Exemption from the payment of the $10.00 tuition fee is provided by legislative enactment for teachers now in service in the schools of North Carolina, and for residents of the State who are preparing to teach during the school year 1931-32.

Teachers now in service and students preparing to teach, who are residents of the State, will be required to sign the usual teacher's agreement to teach in North Carolina for at least six months, or to pay the tuition within one year from date of registration in case they do not teach.

All students occupying a room alone will be charged $10.00.

Students taking in excess of the normal load of 3 courses will be charged a fee of $5.00 for each additional course. Double courses will be counted as two courses.

The registration fee is not returnable after June 5. There will be no refund of room rent or tuition after June 20.

There will be a key deposit of twenty-five cents, which amount will be refunded when the key is returned.

BOARD AND LODGING

The college dining room will not be kept open during Summer School. The cafeteria, which is in the same building with the dining room, will be run for the benefit of the Summer School students and faculty.

A great many members of the faculty and regular college students eat in the cafeteria and find it very satisfactory, and about as cheap as the dining room, with the addition of greater variety from which to select, and longer periods in which to eat. The cafeteria charges are reasonable.

Students will be assigned to rooms upon their arrival at the College. Those who prefer to have their rooms reserved can send in their registration fee of $12.50 and be assigned to rooms in advance. Applicants who find that they will not be able to occupy the rooms assigned to them are required to give notice to the Director five days in advance of the date fixed for occupancy or to forfeit to the Summer School the payment advanced for registration. Those who give notice in time that they cannot attend will have their payments returned.

In case it is desired to change the room assignments, permission to do so must first be obtained from the Superintendent of Buildings. In no case may a room be taken until it has been regularly assigned.

WHAT STUDENTS NEED FOR THEIR ROOMS

The College rooms are supplied with necessary furniture. Each student, however, should bring towels, sheets, one pillow and two cases, and two bedspreads for a single bed.

REGISTRATION

All registrations will be conducted in Frank Thompson Gymnasium beginning at 9 a.m., on June 15th. Students are expected to report in person on Monday, June 15th, so that they may begin class work on the morning of Tuesday, June 16th, at 8 o'clock. Deans and Directors of Instruction will be present to advise students relative to courses.

HOURS OF WORK

It is important to notice that teachers are required to take at least fifteen hours weekly in order to receive credit for one summer session. Additional credits may be taken by students if they have points to justify, and by teachers on approval of the Director. However, a fee of $5.00 will be charged for the extra course, and in no case will a student be allowed more than twelve credits per week. *Each student will be allowed to audit a class five times, if agreeable to instructor.*

The Summer School authorities reserve the right to cancel any course for which the registration is less than eight.

THE ATTRACTIONS OF RALEIGH

Being the capital of one of the original thirteen states, Raleigh is unusually rich in historical collections, fine public buildings, and interesting places and memorials. It is interesting, also, for its churches, its schools, its hotels, and its office buildings, and its growing commercial and industrial activity. Opportunities will be given the students to visit the places of interest.

The various churches welcome all Summer School students to Sunday school and church services, and their pastors have taken a very friendly interest in the morning services at the College auditorium. Raleigh will be found in all respects a delightful place of residence.

THE SOCIAL CENTER

The Y. M. C. A. building will be the social center of the school. This building contains a reading room, an auditorium, several reception rooms, telephone booths, and other conveniences for the promotion of the social life of the students.

THE D. H. HILL LIBRARY

The D. H. Hill Library, one of the most beautiful libraries in the South, will be open for the use of Summer School students. Its spacious reading and periodical rooms afford an opportunity for research and study under the most pleasing conditions. The consolidation of the various departmental libraries into the central library, together with the new volumes purchased during the year, have greatly increased the library facilities. The library maintains a competent staff adequate to render every possible library service.

The Olivia Raney Library and the State Library will also be open to Summer School students for reference work.

FRANK THOMPSON GYMNASIUM

The Frank Thompson Gymnasium is without doubt the finest and best equipped gymnasium in the South. The main floor is 130 by 110 feet, with an intercollegiate basketball court of maximum size, and seating capacity for 2,500 spectators without using the gallery. Two maximum sized cross courts make it possible to run off class and tournament games. The auxiliary gymnasium or exercise room is 110 by 40 feet. Both of these rooms are equipped with full gymnasium apparatus and handball courts. The basement is fitted up with 1,000 private steel combination lockers. Team training rooms, equipped with private showers and lockers, a towel service room, an equipment room, and a wrestling and boxing room compose one-half of the basement. The other half is given over to the Armory.

The swimming pool is located in an annex amply lighted both by windows and skylights, and finished with white tile. The pool is 75 by 30 feet, with room sufficient to accommodate several hundred spectators.

RELIGIOUS ACTIVITY

The churches of the city extend to the students of the Summer School a warm welcome and many of their Sunday Schools have special classes for them. A program of visiting will be arranged for those who wish to see the most successful Sunday School classes of the city in operation.

SHORT COURSE FOR FARMERS, FARM WOMEN AND BOYS' AND GIRLS' CLUB MEMBERS

FARM AND HOME WEEK—JULY 28, 29, 30 AND 31

This week, in addition to the usual Farmers' and Farm Women's Convention, there will be short courses in Poultry, Livestock, Field Crops and Marketing; Food Selection and Preparation, Clothing and Room Improvement, for those farmers and farm women who are interested in these subjects.

4-H CLUB SHORT COURSE

A course for 4-H Club members, Local Leaders and Extension workers will be held August 3 to August 8. This course is designed to meet the needs of the 4-H Club boys and girls who wish to come to the college for a week of instruction in subjects relating to Agriculture, Home Making and Leadership Training.

This course will be conducted by the N. C. Agricultural Extension Service. Additional information may be had from County Farm or Home Agent, or by writing to L. R. Harrill, State Club Leader, State College Station, Raleigh, North Carolina.

ANNUAL CONFERENCE OF TEACHERS OF VOCATIONAL AGRICULTURE

The annual conference of teachers of vocational agriculture will be held at N. C. State College, Raleigh, June 29, 30, and July 1, 1931.

One-half day will be devoted to a general conference and two and one-half days to district conferences.

The annual conference will be under the direction of Roy H. Thomas, State Supervisor of Agricultural Education, and the assistant supervisors of agricultural education.

ANNUAL MEETING OF YOUNG TAR HEEL FARMERS

The annual meeting of Young Tar Heel Farmers, the State Organization of students of vocational agriculture, will be held in Raleigh on July 2 and 3.

COURSES TO BE OFFERED IN THE SUMMER SCHOOL

ABBREVIATIONS FOR BUILDINGS

C.—Ceramic
G.—Gymnasium
H.—Holladay
P.—Page
P. & E.—Physics and Electrical Engineering Building
Pe.—Peele Hall
Pk.—Polk Hall
Pr.—Primrose
Pt.—Patterson
R.—Ricks
T.—Textile
Pl.—Pullen Hall
W.—Winston
Z.—Zoology Building

AGRONOMY

Agron. s1. Cotton Classing. Twenty hours a week for six weeks. No college credit. Mr. Darst, Mr. Cotner. 9-1 M. T. W. T. F. Pt. 45.

The Summer School of Cotton Classing is designed to prepare men to enter the cotton business and to enable producers to become familiar with grades, so that they may handle their cotton more efficiently from the time it opens in the field until it is baled.

Inefficient handling at the present time is causing the State a loss of millons of dollars annually. The business side of cotton transactions as well as the practical grading and stapling will be included in the course.

Experience will not be necessary for taking the course, as the class will work in groups according to previous training. Students may qualify as competent cotton classers at the expiration of this course.

The course will consist of lectures and daily practice in grading and stapling cotton samples, according to the Universal Cotton Standards, including the descriptive grades as well as the official.

The course will be given each day, with the exception of Saturday, for four hours a day.

The first period of each day will be devoted to lectures and discussions, and the remaining time will be used in the actual practice of grading and stapling of cotton. An expert from the United States Department of Agriculture will assist in this course.

The Cotton Classing course is designed for a special group, and does not carry collegiate credit. There is a flat charge of $27.50 for the whole course in Cotton Classing. Persons registered for fifty per cent or less of the course will be charged $15.00. All fees paid on or before registration.

Agron. s201. Cereal Crops. Prerequisite: General Field Crops. Five hours a week; three credits. Mr. Darst, Mr. Cotner. 11 M. W. F.; 11-1 T. Th. Pt. 26.

Lectures and recitations in history, production, cultivation, improvement, harvesting, storage, and marketing. Laboratory consists of structural studies, seed judging, variety identification, and commercial grading. Special problems in cereal production.

Agron. s206. Legumes Crops. Five hours a week for three weeks; one and one-half credits. Mr. Darst. Prerequisite: General Field Crops. F. C. 101.

Lectures in history, botanical relationships production, adaptation and use of legumes that may be used for soil improvement purposes. Practice in the identification of legume plants and their seed, including a study of quality in seed.

Agron. s210. Cotton Production, or s215. Tobacco Production. Five hours a week; three credits. Mr. Cotner. 8 M. T. W. T. F. Pt. 45.

Lectures and recitations on history, production, adaptation, types and varieties, including cultivation, harvesting, grading, and marketing, will be given. Laboratory consists of variety studies, the classing of cotton, and the grading of tobacco.

Agron. s216. Tobacco Grading. Five hours a week for three weeks; one and one-half credits. Mr. Darst and Mr. Cotner.

Lectures on the U. S. Standard Grades for flue-cured tobacco. Practice in assorting of leaf and in the application of grades.

Agron. s330. Advanced Seed Judging and Grading. 12 M. W. F. 2-4 T. Th. Prerequisite: Cereals, Five hours a week; three credits. Mr. Darst, Mr. Cotner. Pt. 26.

Lectures and practice in planning, arranging and judging field crops exhibits. Study of the Federal grain and hay standards. A course planned to develop experts in the judging of field crop seeds and in the grading of grain and hays. A course designed for agricultural extension workers and vocational teachers.

Agron. s351. Advanced Study of Crops Research. Undergraduate credits, 3-9; Graduate credits, 2-6. Elective for graduates and advanced undergraduates. Mr. Darst, Mr. Cotner. By arrangement. Pt. 26

A field study of the research work and demonstration work in crops. This course will be based directly upon experimental work in progress.

The crop or crops for study will be agreed upon by the class.

Agron. 401. Crop Research. Prerequisite: Eighteen credit hours in Field Crops. By arrangement. Mr. Darst and Mr. Cotner.

SOILS COURSES

Agron. s280. Modern Fertilizer Practice. Five hours a week for three weeks; one and one-half credits. Mr. Cobb. Prerequisite: Soils 265.

A course dealing with modern fertilizer practices as they affect the agricultural teacher.

Agron. s315. Soils of North Carolina. Five hours a week; three credits. Mr. Cobb. 9 M. T. W. T. F. Pt. 16.

A study of the origin, characteristics, distribution and natural productiveness of the soils of the Southern States. Emphasis is placed on the agricultural adaptation and fertilizer needs of the more important types. The majority of southern soils are represented in North Carolina and samples of other soils are available for laboratory study. Field trips form an improtant part of the course.

Agron. s324. Fertilizer Problems. Five hours a week; three credits. Mr. Cobb. By arrangement. Pt. 16.

Designed especially for agricultural teachers and specialists.

A course dealing with fertilizer problems which the agricultural teacher or specialist may meet with in connection with his work. It includes a con-

sideration of methods of carrying out fertilizer demonstrations, a study of the results of fertilizer experiments, the modification of ready mixed fertilizers, the proper use of the new concentrated fertilizers, etc. A trip is made to the Coastal Plain Test Farm for the purpose of studying the fertilizer experimental plots.

Agron. s410-A. Seminar. One credit. Mr. Cobb. By arrangement. Pt. 16.

A graduate seminar in soils.

Agron. s430. Soil Research. Five or ten hours a week; three or six credits. Mr. Cobb. By arrangement. Pt. 16.

A study of the methods and results of research in the various branches of soil science.

ANIMAL HUSBANDRY AND DAIRYING

A. H. s204. Dairy Cattle and Milk Production. Five times a week; three credits. Prerequisite: A. H. 103. Mr. Ruffner. By arrangement. Pk. 110.

A subject devoted to a study of the dairy cow as a milk producer. By the use of the textbook, supplemented by lectures, the dairy breeds are studied as to their characteristics, adaptation, selection, management, feeding, calf raising. Field work consists in studying dairy types, selection by practice judging, and balancing dairy rations.

A. H. s217. Ice Cream Making. Four credits; lectures and laboratories. Prerequisite: A. H. 103. Mr. Ruffner. By arrangement. Pk. 110.

Standardizing of mixing and freezing of ice cream, sherbets, and other frozen products, and the physical principles involved; types of freezers, flavoring materials, fillers and binders; ice cream standards; the theory and practice of artificial refrigeration and its use in the ice cream plant.

A. H. s304. Herd Improvement. Five times a week; three credits. Prerequisite: A. H. 101, 102, 103. Mr. Ruffner. By arrangement. Pk. 110.

This course is designed for training students as Supervisors of Cow-Testing Associations in North Carolina. Rules and requirements for Advanced Registry Testing are studied in detail. Lectures are supplemented with laboratory work, and the student is required to do practical work in keeping feed costs, milk weights, butterfat tests necessary in the efficient management of dairy associations.

BOTANY

Botany s101. General Botany. Nature of the Higher (Crop) Plants. Two lectures; two recitations; eight hours laboratory; four credits. Equivalent to Freshman and Sophomore courses given the first quarter of the regular college year. Mr. Shunk, Mr. Whitford. 8 M. T. W. T.; 2-4 M. T. W. T. Pt. 47.

This course is offered to meet the needs of the following groups of students:

(1) Teachers of Biology who desire to enhance their knowledge of the higher plants, especially the crop plants.

(2) Agricultural workers who desire a thorough review of the fundamental structure and functions of the crop plants.

(3) College students who, having failed this course in past years, desire to change their record in regard to it.

In the course the fundamental structural and functional facts concerning the crop plant are taken up. Beginning with the flower, the work proceeds to the problems of fruits, seeds and germination of seeds. Then some fundamental biology is given relating to cells and tissues. Following this, the structural and functional data concerning roots, stems, buds, and leaves are presented. Numerous excellent microscope slides are used to present the minute structural aspects, while the functional aspects are given with the aid of a number of striking demonstration experiments. Fresh crop plant material is used throughout the course for illustrative purposes. The course closes with a thorough review and summary of the whole field studied.

Botany s202. General Bacteriology. Four recitations; eight hours laboratory; four credits. Prerequisite Bot. 102 or equivalent. Mr. Shunk. 11 M. T. W. T.; 2-4 M. T. W. T. Pt. 47.

This course, which is basic for all other work in the subject, gives an introduction to the principles of bacteriology. All of the various fundamental phases of bacteriology are taken up. Through laboratory work the student learns modern cultural methods of handling and studying bacteria. Toward the latter part of the term opportunity will be offered students to do special laboratory work on water, milk, and disease-producing bacteria, if they so desire.

Botany s203. Systematic Botany. Two lectures; eight or sixteen hours of laboratory; five credits. Equivalent to Junior and Senior courses given in third quarter of the regular college year. Prerequisite: Elementary Botany. Mr. Shunk, Mr. Whitford. 9 T. Th.; 2-5 M. T. W. T. F. Pt. 47.

This course is presented for all students who desire a more intimate outdoor acquaintance with plants, both cultivated and wild. Teachers of biology, agricultural students, and all others interested in natural history will find this course especially desirable.

The basis of the course consists of practice in identification of plants with the aid of the plant manual. Material collected on the field excursions is brought into the laboratory and studied with the aid of binocular microscopes. In the lectures, the fundamental characters of the natural plant families are pointed out and the voluntary relationships of these families are discussed. On the frequent field excursions the class will visit the floristically rich areas about Raleigh. On these excursions a few lectures will be given, dealing with the relation of plants to their environment. By the time the course closes, the student should personally be acquainted with the commoner trees, shrubs, wild flowers, and weeds of the State.

Botany s400. This graduate course will be arranged to suit the students and the Department.

CHEMISTRY

Chem. s101a. General Chemistry. Five hours in classroom and five hours in laboratory each week. Four credits. Equivalent to first term General Chemistry as given in the regular college year. Mr. Wilson Mr. Satterfield. 8 M. T. W. T. F.; 11-1 M. F. W. 114.

Composition and properties of air and water. First principles of Chemistry, such as atomic theory, laws of chemical combination, valence, chemical

formulas and equations, oxidation, reduction, behavior of gases and solutions. Study of a few typical elements, such as oxygen, hydrogen, carbon and nitrogen, together with their simpler compounds.

Chem. s101b. General Chemistry. Five hours in classroom and five hours in laboratory each week. Four credits. Equivalent to second term General Chemistry as given in the regular college year. Mr. Wilson, Mr. Satterfield. 9 M. T. W. T. F.; 11-1 T. Th. W. 102.

Particular attention given to chlorine, sodium, nitrogen, sulfur, flourine, bromine, and their compounds. Study of such common substances as salt, lye, soda, carbon disulfide, prussic acid, petroleum, coal tar, acetylene; ammonia and its more interesting uses such as in ice machines; sulfur dioxide in household refrigerators and as a bleaching and germicidal agent; compounds of nitrogen in warfare and agriculture. Introduction to acids, bases, salts, ionization, hydrolysis, equilibrium, the periodic law and the new theories of the structure of the atom.

Chem. s101c. General Chemistry. Five hours in classroom and five hours in laboratory each week. Four credits. Equivalent to third term General Chemistry as given in the regular college year. Mr. Wilson, Mr. Satterfield. 1 M. T. W. T. F. Laboratory by arrangement. W. 114.

Chemistry of clays, ceramics, glass, cement, soils, fertilizers, insecticides, lime, hard water, alloys, paints, storage batteries, photography, flames and explosions. Compounds and properties of phosphorous, arsenic, bismuth, silicon, boron, potassium, calcium, magnesium, zinc, aluminum, iron, tin, lead, nickel, copper, mercury, silver, gold, platinum and other less common elements. Thermochemistry, colloids and radioactivity.

Chem. s111. Qualitative Analysis. Two hours lecture with four laboratory periods of three hours each, per week. Equivalent to one term of college work. Four hours credit. Prerequisite: General Chemistry. Mr. Wilson. 11 T. Th.; 8-11 M. T. W. T. F. W. 102.

A systematic study and separation of the metallic ions and non-metallic ions into their respective groups, their identification and the chemical reactions involved. The last two weeks will be given over to the complete analysis of mixed salts, compounds, and alloys.

Chem. s112. Quantitative Analysis. Two lectures and twelve hours laboratory. Equivalent to one term of college work. Four hours credit. Prerequisite: Qualitative Analysis. Mr. Wilson. 10 M. W.; 2-5 M. T. W. T. F. W. 102.

This work will deal with the theory and practice of making up and standardizing acids, bases, di-chromate and permanganate solutions, also the determination of the strength of unknown acids and bases, the analysis for the per cent purity of iron ores, oxalates, sulphates, magnesium phosphate rock, etc.

Chem. s221. Organic Chemistry. Seven hours lectures with eight hours laboratory. Six credits. Prerequisite: General Chemistry. Mr. Wilson. By arrangement. W. 102.

Chem. 240. Food Products and Adulterants. Five times a week; three credits. Prerequisite: Training satisfactory to instructor. Mr. Satterfield. 10 M. T. W. T. F. W. 115.

A study of the production and manufacture of food products. Food principles, cereals, starches, sugars, fats, milk and milk products, the packing house, food preservation, beverages, spices and condiments will be treated. Food legislation.

Chem. s341. Chemistry of Vitamins. Five hours a week; three credits. Prerequisite: Training satisfactory to the instructor. Mr. Satterfield. 11 M. T. W. T. F. W. 115.

This course is devised to give practical knowledge of the application of the vitamin hypothesis to human nutrition. The history, nomenclature, properties, distribution, effects of deficiencies, and methods of determining vitamin values will be discussed.

Chem. s344. Food, Nutrition and Diet. Five hours a week, three credits. Prerequisite: Training satisfactory to instructor. Mr. Satterfield. By arrangement. W. 115.

The influence of vitamins, minerals, proteins, amino acids, carbohydrates, fat, fiber, flavor, color, enzymes, preservatives and stimulants on the body. Chemical and physical nature of carbohydrates, fats and proteins. Digestion and metabolism. Study of the proper diet. Flesh-forming and flesh-producing diets. Diet in disease. Sour milk therapy.

While human feeding is emphasized in this course, principles here discussed are applicable to the feeding of animals as well.

ECONOMICS

Econ. s102. Introduction to Economics. Five hours a week; three credits. Mr. Moen. 9 M. T. W. T. F. Pe. 109.

This course is the regular college one-term course required of all students in Engineering and is designed for those students who do not feel able to devote more than one term to the study of Economics, and also for teachers preparing to teach Economics in High Schools.

This is an elementary course in Economics. It treats of the business aspects and economic organization of society. It includes a study of the great fundamental economic laws which apply to all professions and occupations; a study of the production, distribution and value of economic goods, and a study of the institutions, agencies, and ideals which dominate, operate and control the manner, means, and methods of making a living.

Econ. s103. General Economics. Five hours a week; three credits. Mr. Moen. 8 M. T. W. T. F. Pe. 109.

This is the first term of the regular college course in General Economics.

An introduction to the general field of Economics. A study of economic institutions and the general principles governing the production and distribution of wealth under the existing economic organization.

Sections for F. W. S.

Econ. s112. Accounting for Engineers. Five hours a week; three credits. Mr. Leager. 8 M. T. W. T. F. Pe. 3.

Required of students in the School of Engineering. Not open to students in Business Administration.

A survey of accounting and financial statements and records; their construction, their use and interpretation.

Econ. s201. Accounting I. Five hours a week; three credits. Mr. Leager. 9 M. T. W. T. F. Pe. 3.

Required of all sophomores in Business Administration and Industrial Management.

A course in the theory and practice of accounting, covering the essential principles of accounting as applied to the several types of business organiza-

tions, giving interpretations of the structure, form, and uses of formal business statements such as Balance Sheets, Statements of Profit and Loss, etc. Sections for F. W. S.

Econ. s211. Business Law. Five hours a week; three credits. Prerequisite: Econ. 102 or 103. Mr. Moen. 10. M. T. W. T. F. Pe. 109.

Required of seniors in Business Administration, and in Ceramic, Chemical, Civil, Architectural, Electrical, and Mechanical Engineering, and teachers of commercial subjects. Elective for other students.

A general survey of the sources of law, fields of law, contracts, agency, sales, law of partnerships and corporation, negotiable instruments, bailments and carriers, personal property, suretyship and guaranty, bankruptcy, crimes in business.

Econ. s212. Statistical Method. Five hours a week; three credits. Elective. Prerequisite: Economics 102. Mr. Leager. 10 M. T. W. T. F. Pe. 3.

A study of the elements of statistical methods, collection and analysis of statistical data. This course stresses the application of statistical methods to educational data—graphical presentation, and analysis of teachers' problems.

Econ. s265. Farm Marketing. Five hours a week; three credits. Prerequisite: Economics 102. Mr. Knapp. 9 M. T. W. T. F. R. 208.

A study of the economic principles underlying successful marketing of farm products, market organization and control, price-making forces, and critical examination of the present system of marketing farm products.

Econ. s266. Current Marketing Problems. Five hours a week for three weeks; one and one-half credits. Mr. Knapp. Prerequisite: Econ. 102 and Agr. Econ. 265 or the equivalent.

A discussion of practical marketing problems affecting teachers of vocational agriculture.

Econ. s269. Farm Accounting. Five hours a week; three credits. Mr. Knapp. 11 M. T. W. T. F. R. 208.

This course deals with the practical aspects of farm accounting, such as preparation of inventories of farm property, simple financial statements, method of keeping farm records, analysis of farm records, and the interpretation of results obtained from farm business transactions. Attention will also be given to methods of obtaining information on the business aspects of farming.

Econ. s363. Agricultural Cooperation. Five hours a week; three credits. Mr. Knapp. By arrangement. R. 114.

A study of all types of farmers' coöperative enterprises. Specific consideration is given to local community coöperation, both economic and social, farmers' buying, selling, and service organizations. A comparative study of all foreign and American farmers' coöperatives is made.

Econ. s366. Marketing Methods and Problems. Five hours a week; three credits. Prerequisite: Econ. 103, Agr. Econ. 260, Agr. Econ. 265, and three additional credits in Economics. Mr. Knapp. By arrangement. R. 114.

This course will consist of a study of the major problems in the field of agricultural marketing. The problems related to prices and the marketing mechanism will be given special consideration. The course is designed primarily for those students who have had General Economics and the first course in Farm Marketing.

EDUCATION

Courses for Undergraduates

Ed. s101. Introduction to Psychology. Five hours a week; three credits. Mr. Lucas. 10 M. T. W. T. F. H. 3.

The human receiving, connecting, and reacting nervous mechanisms; human behavior; instinctive tendencies, reflexes, instincts, and capacities; emotional behavior; habit and habit formation; the learning process; memory; thought; individual psychology.

Ed. s203a. Educational Psychology. Five hours a week; three credits. Required of students in Education; elective for others. Mr. Garrison. 8 M. T. W. T. F. H. 3.

Original nature and environment are analyzed in this course as to their function in the educational processes. The elementary principles of psychology are illustrated and studied as they relate to the learning process.

Ed. s203b. Educational Psychology. Five hours a week; three credits. Required of students in Education; elective for others. Mr. Garrison. 9 M. T. W. T. F. H. 3.

This part of educational psychology is concerned with the physical and mental development of the high school boys and girls. Social development; character development; emotional development and control; religious and moral development; and, mental hygiene are topics given special consideration.

Ed. s205. Introduction to Education. Five hours a week; three credits. Mr. Mayer. 11 M. T. W. T. F. Pu. 7.

This course is intended to introduce the college student to the problems of education. Some of the problems for consideration are: General and vocational education, the relation of the teacher, the school, and the community, materials and practices, the individuality in school children, educational systems at work, and measuring the outcome of teaching and learning.

Ed. s212. Principles of High School Teaching. Five hours a week; three credits. Required for the degree of B. S. in Education. Prerequisite: Six credits in Educational Psychology. Mr. Showalter. 8 M. T. W. T. F. W. 104.

Building on the physiological and psychological factors which make learning possible, instruction in this course is directed toward the conditioning and use of the school environment to make learning meaningful, effective and satisfying.

Students taking this course should take either Ed. s303 or Ed. s336, also.

Ed. s303. Problems of the High School Teacher. Five hours a week; three credits. Mr. Highsmith. Prerequisite: Twelve credits in Education. 9 M. T. W. T. F. Pe. 206.

This course will cover the State requirement with reference to supervision for a high school teacher. Topics and problems discussed will include: The aims of secondary education; the high school teacher, and the high school pupil; discipline; classroom technique; training in habits of study; the curriculum; student rating; salaries; professional duties and responsibilities; school morale, and extra-curricular activities.

Textbooks, lectures, readings, and reports.

Ed. s305. Methods of Study. Five hours a week; three credits. Mr. Cook. Prerequisite: Twelve credits in Education. 11 M. T. W. T. F. Pe. 201.

A course for teachers in the methods of study and the technique of supervising study. Considers the factors of study, the chief difficulties, the general principles for improving study, and special devices. Teachers will have the opportunity of making special studies and reports on study procedures related to the subjects which they teach.

***Ed. s306. Methods of Classroom Teaching.** Five hours a week for three weeks; one and one-half credits. Mr. Cook. Prerequisite: Permission to register. By arrangement. H. 205.

The selection and use of teaching procedures with emphasis on the newer phases and the improvement of some of the more or less standard techniques. Attention will be given to problems which give teachers most trouble.

***Ed. s309. Supervised Practice.** Five hours a week for three weeks; one and one-half credits. Mr. Cook. Prerequisite: Permission to register. By arrangement. H. 205.

A study of the ways and means of improving supervised practice such as building an adequate supervised practice program for each student, arousing and maintaining interest, improving the technique of supervising projects, study and planning of projects, and standards of achievement.

***Ed. s313. Evening Class Material.** Five hours a week for three weeks; one and one-half credits. Mr. Cook. Prerequisite: Permission to Register. By arrangement. H. 205.

The selection and organization of materials for use in teaching agricultural evening classes, including the collection and use of experimental data, charts and graphs, and the use of conference procedure in evening classes.

***Ed. s314. Course of Study in Vocational Agriculture.** Five hours a week for three weeks; one and one-half credits. Mr. Cook. Prerequisite: Permission to register. By arrangement. H. 205.

A study of the selection of subject-matter and its distribution over a four-year period in such a way as to avoid unnecessary repetition and providing for suitable progression as related to difficulty.

Ed. s318. Teaching of Commercial Subjects. Eight hours a week; four credits. Prerequisites: Ed. 201, Ed. 212, and twelve credits in commercial subjects. By arrangement. H. 11.

This course deals with two phases of teaching commercial subjects, the selection of subject-matter through study of situations in which students of the secondary school will be employed, and the selection of suitable equipment, its arrangement and use.

Ed. s319. Methods in Commercial Education. Eight hours a week; four credits. Prerequisites: Ed. 201, Ed. 212, and twelve credits in commercial subjects. By arrangement. H. 11.

This course deals with the methods of teaching commercial subjects in the secondary school. It has to do with devices, and techniques of presenting subject-matter, establishing rates of progress, rating of pupils, and the preparation of lesson plans.

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* Three weeks' course to be held July 6-24 inclusive.

If there is sufficient registration and demand this course may be divided into two sections, one in methods of teaching short-hand and typewriting and one in methods of teaching bookkeeping.

Ed. s320. Vocational Guidance. Five hours a week; three credits. Mr. Boshart. Prerequisite: Twelve credits in Education. 9 M. T. W. T. F. H. 16.

Treats of the problems of directing pupils in the study of occupations for the purpose of selecting satisfactory life work. It includes studies of the history of occupational guidance and personnel administration, principles and practices in guidance and employment, compulsory school laws, child labor legislation, and forms and records essential for school use.

Ed. s321. Vocational Education. Five hours a week; three credits. Mr. Boshart. Prerequisite: Twelve credits in Education. 12 M. T. W. T. F. H. 16.

This course is organized especially for administrators, supervisors, principals, and teachers who have not had opportunity of working out the relationships governing vocational and general education. It will treat of the needs and place of vocational education in the public school system; practices in organization of vocational education and vocational guidance in trades and industries, home economics, and agriculture, including continuation schools, part-time and evening classes; and the problems related to administration of the Smith-Hughes Act.

Ed. s323. Study of Occupations. Five hours a week; three credits. Mr. Boshart. 10 M. T. W. T. F. H. 16.

Given especially for principals and school counselors who are aiding pupils in the selection of a life work, this course will be a study of the essential elements found in various occupations. Interviews with men and women in different lines of endeavor and visits to plants and offices will form a goodly part of the work which will be written up in form to present to students of high school or college grade. Readings, reports, discussions, and lectures by class members will include the following: importance in society, the kinds of work involved, advantages and disadvantages, what preparation is necessary, individual qualifications, together with matters of income and general environment.

Ed. s327. Standard Testing and Measuring. Five hours a week; three credits. Prerequisite: Twelve credits in Education or Senior Standing. Mr. Mayer. 8 M. T. W. T. F. Pu. 7.

This course will give the teacher an insight into the more common achievement, diagnostic, and mentality tests, and their use and interpretation from the standpoint of the teacher, supervisor, and administrator.

Ed. s328. Tests, Examinations, and Grading. Five hours a week; three credits. Prerequisite: Twelve credits in Education or Senior Standing. Mr. Mayer. 11 M. T. W. T. F. Pu. 7.

This course will deal with the principles and practices of building up and using classroom tests, and the principles underlying grading. (Teachers contemplating taking this course should bring textbooks that they are using in their High School Teaching.)

Ed. s330. Visual Instruction. Five hours a week; three credits. Prerequisites: Twelve credits in Education. Mr. Armstrong. 9 M. T. W. T. F. Pe. 201.

An advanced course in the psychology, methods, and technique of visual instruction; its place and limits, evaluation and expense of various aids, aids available. Practice in the making and use of practical visual aids.

Ed. s331. Problems in Visual Instruction. Five hours a week; three credits. Prerequisites: Ed. 208 or Ed. 330 and 9 other credits in Education. Mr. Armstrong. 8 M. T. W. T. F. Pe. 201.

A thorough study of educational problems pertaining to teaching through the sense of sight; psychology of sight perception; comparison of various visual aids; a study of research reports. Each student will be required to complete a brief special problem in the field of visual instruction.

Ed. s334. School Finance. Five hours a week; three credits. A practical course for superintendents and principals. Prerequisite: General Economics and Public Finance. Twelve credits in Education. Textbooks, lectures, readings and reports. Mr. Lockhart. 9 M. T. W. T. F. Pe. 208.

The topics treated will include:

Sources and distribution of school funds; budget making; school costs; bonds and the financing of capital outlays; accounting; financial statements and reports; business practice.

Ed. s335. Public School Administration. Five hours a week; three credits. This course is intended primarily for superintendents and principals. Prerequisite: Twelve credits in Education. Mr. Lockhart. 8 M. T. W. T. F. Pe. 208.

The following problems will receive consideration:

The powers and duties of the board of education; the powers and duties of the superintendent; the county-wide plan; consolidation of schools; transportation of pupils; school buildings and equipment; operation and maintenance of plant; janitor service; selection, purchase and distribution of supplies; school reports; problems pertaining to the teacher, pupil and home; educational problems of a county school system.

Textbooks, lectures, readings and reports.

Ed. s336. Problems in Secondary Education. Five hours a week; three credits. Prerequisite: Twelve credits in Education. Mr. Highsmith. 11 M. T. W. T. F. Pe. 206.

The purpose of this course is to give as practical assistance as possible to those men and women who wish to become high school principals in North Carolina. Frequent reference will be made to conditions in the State. The following problems will be discussed:

Aims of secondary education; the curriculum (with special reference to the North Carolina course of study and High School reorganization); standards for high schools; classification of pupils; control of pupils and discipline; regulation of attendance; guidance of pupils; classroom standards; examination; marketing system; interpretation of intelligence scores; supervision of study; class schedule making; duties of the principals; supervision of instruction; selection of teachers; teaching load, salaries; professional ethics.

Textbooks, lectures, readings, and reports.

Ed. s337a. The Teaching of General Science. Five hours a week; three credits. Prerequisites: Twelve credits in Education; twelve credits in biological science; twelve credits in physical science. Mr. Showalter. 10 M. T. W. T. F. W. 104.

Study of the content of the high school course in General Science; practice in the conduct of demonstration and laboratory work, reading and discussion of selected books and periodical articles dealing with descriptive and informational material in the field of natural science; adaptation of teaching procedures to the various types of science subject-matter.

Students taking this course should have their General Science text.

Ed. s338b. The Teaching of High School Physics. Five hours a week; three credits. Prerequisite: Twelve credits in Education; twelve credits in Physics; twelve additional credits in natural science. Mr. Showalter. 11 M. T. W. T. F. W. 104.

Study of the content of the high school course in Physics; practice in the conduct of demonstration and laboratory work; selected references on descriptive and informational Physics; selection and use of suitable teaching procedures.

Students taking this course should have their text in high school Physics.

Ed. s339. The Teaching of High School Geography. Five hours a week; three credits. Prerequisite: Twelve credits in Education. Mr. Showalter. 9 M. T. W. T. F. W. 104.

Study of the content of the high school course in Geography; the conduct of demonstration and laboratory work; the problem approach; the technique of class discussion and directing or supervising student effort.

Students taking this course should have their texts in high school Geography.

Ed. s351. Organization and Administration of Part-time and Continuation Schools. Five hours a week; three credits. Prerequisites: Twelve credits in Education or administrative experience. Mr. .....

A study of the part-time and continuation schools as to their place in an educational system; the selection and organization of teaching materials; the preparation of type lessons; the division of time allotments; the methods of teaching, and the procedure in organization of classes. Primarily for principals and teachers who are attempting or planning to attempt work of this character.

Ed. s353. Theory of Industrial Arts in the Elementary School. Five hours a week; three credits. Prerequisite: Twelve credits in Education. Mr. Boshart. 8 M. T. W. T. F. H. 16.

A study of the value and place of Industrial Arts in the elementary school. The correlation of Industrial Arts with other school subjects; the methods of teaching and supervision, and the study of industries, with the view of selecting suitable projects for classroom use. Primarily for teachers and supervisors of the elementary schools.

Ed. s354. Practical Arts Problems. Ten hours a week; three credits. Prerequisite: Twelve credits in Education. Mrs. Leggette. 9-11 M. T. W. T. F. or 11-1 M. T. W. T. F. H. 15.

Treats of the selection and organization of suitable projects in Industrial Arts and the working out in detail of such as will meet the needs of the class. The meaning of Industrial Arts and the methods of making it a part of the

regular work of the school will be discussed. For teachers in the elementary schools who have had teaching experience and who have not had special work in Industrial Arts.

Ed. s355. Art Studies in the Elementary School. Five or ten hours a week; one and one-half or three credits. Prerequisite: Twelve credits in Education. Mrs. Leggette. 9-11 M. T. W. T. F. H. 15.

A study of art work in the elementary school designed especially to aid teachers in making concrete applications in their classrooms.

Ed. s356. Clay Modeling for Public School Teachers. Five double periods; three credits. Additional work and credit if desired. Mr. Paulson. 9-11 M. T. W. T. F. C. 1.

Work will consist of modeling, moulding, casting, glazing, and firing. Problems will be selected for use in elementary and secondary schools with varying degrees of equipment.

Ed. s357. Fine Arts for Teachers. Five double periods; three credits. Additional work and credit if desired. Mr. Paulson. 11-1 M. T. W. T. F. C. 1.

Drawing in pencil, charcoal, crayon and water color from casts and from nature. Perspective theory and outdoor sketching. Lettering and poster design. Lectures in appreciation of art. Also individual instruction to advanced students.

Note: Students may, if they desire, divide their time between Practical Arts Problems, Ed. s354, and Clay Modeling for Public School Teachers, Ed. s356. The demand for more advanced work in the above mentioned courses will be satisfied when possible.

Ed. s360. Special Problems in Teaching Agriculture. Five hours a week; three credits. Prerequisite: Twelve credits in Education, including Special Methods of Teaching Agriculture. Mr. Cook. 9 M. T. W. T. F. Pe. 201.

This course is for graduates of the Department of Agricultural Education. It will consist of special individual problems and preparation of plans for the next year's work, involving a survey of the school and community in which they are to work the coming year. From this information each student will prepare a program of agricultural education especially adapted to his school and community. It will include classroom arrangements and fixtures, library equipment, gathering specimens and illustrative materials, and the organization of courses of study.

Ed. s364. History of Education. Five times a week; three credits. Mrs. Wallace. 11 M. T. W. T. F. Pu. 8.

This course will include a brief study of European Education and its influence upon the American Public School, the early development of the elementary and high schools of America, and the present tendencies of our educational system. The period from 1890 to the present will be given special consideration.

Ed. s375. Psychology of Language. Five hours a week; three credits. Prerequisites: Ed. 203 and 6 credits in Education. Mr. Garrison. 11 M. T. W. T. F. H. 5.

Early means of communication by the child; early forms of linguistic activities; the development of oral speech; speech defects; speech needs, and types

of language activities will be studied in the first part of this course. Such topics as the following will be studied the latter part of the course: The child's vocabulary; written vs. spoken vocabularies; reading vocabulary and the significance of reading ability to school success.

Ed. s405. Psychology of Individual Differences. Five hours a week; three credits. Mr. Garrison. 12 M. T. W. T. F. H. 5.

Modern conceptions and methods of evaluating individual differences will be carefully studied and compared with earlier conceptions. A part of this course will be given over to methods of computing averages, variability and relationships. The problem of nature vs. nurture as it applies to education will receive special attention.

Ed. s408. Supervision—The Improvement of Instruction. Five hours a week; three credits. Prerequisite: Eighteen hours in Education. Open to college graduates only. Mr. Highsmith. 10 M. T. W. T. F. Pe. 206.

For principals of High Schools, Heads of Departments, Supervisors and Teachers.

This course is offered to meet a growing demand for supervision of High School instruction. The purpose of Supervision is the improvement of instruction.

The problems involved in the supervision of teachers; the planning and organization of supervision; the functions of supervision; rating of principals, supervisors and teachers; classroom visitation and conferences; the improvement of teachers in the service.

Textbooks, lectures, readings, and reports.

Ed. s416. Problems in Agricultural Teaching. Five hours a week; three credits. Prerequisite: Eight credits in Education. Mr. Cook. 12 M. T. W. T. F. Pe. 201.

Investigations, reports, and a critical evaluation of present practices with constructive remedies. The content of the course will vary, according to the problems selected for study.

NOTE: COURSES FOR TEACHERS OF COMMERCIAL SUBJECTS.

Courses especially helpful are listed in the economics section and numbered Ec. 102, Ec. 103, Ec. 112, Ec. 201, Ec. 210, Ec. 211, and Ec. 212.

ENGINEERING

C. E. s105. Mechanics. Five hours a week; three credits. Prerequisite: Trigonometry and Analytics. Mathematics 103 and 104. Mr. Foster. 8 M. T. W. T. F. P. 106.

Statics, including concurrent forces, parallel forces, noncurrent forces; friction, centroids, moment of inertia, rectilinear motion, curvilinear motion, and rotation.

M. E. s102. Engineering Drawing. Ten or twenty hours a week; three or six credits. Required of Engineering Freshmen. Mr. Foster. 9-1 M. T. W. T. F.; 10-12 M. T. W. T. F. P. 106.

Drawing-board work, covering lettering, orthographic projection, auxiliary projection, isometric projection, cabinet projection, intersection and develpment, working drawings, and blue-printing.

M. E. s103. Descriptive Geometry. Ten hours a week; three credits. Mr. Foster. 10-12 M. T. W. T. F. P. 106.

This work covers the representation of geometrical magnitudes, by means of points, lines, planes, and solids, and the solution of problems relating to them.

M. E. s105 Woodshop. Five or ten hours a week; one or two credits. Mr. Wheeler. 2-4 M. T. W. T. F. Woodshop.

Use of bench tools, reading blue-prints, making cabinet joints, operation and care of wood-working machinery. Correct methods of staining, varnishing, filling and gluing.

M. E. s107. Mechanical Drawing. Four, seven or ten hours per week; one, two or three credits. Mr. Foster. By arrangement. P. 106.

Drawing-board work, covering machine fastenings, pipe fittings, elementary cams, technical sketching, working drawings, tracing and blue-printing.

M. E. s118. Machine Shop I. Ten hours a week; two credits. Mr. Wheeler. 9-11 M. T. W. T. F. Woodshop.

Required of Seniors in Chemical and Juniors in Ceramic and Mining Engineering.

Instruction in the use of hand and machine tools.

M. E. s130. Metal Work. Fifteen hours a week; three credits. Mr. Wheeler. 9-12 M. T. W. T. F. Woodshop.

Instruction will be given in elementary phases of metal work, including filling, chipping, drilling, bending and forming, and problems on the drill press, lathe, and shaper. Intended for teachers of general shops where metal work will be a part of the course offered.

M. E. s132. Woodworking for Teachers. Fifteen hours a week; three credits. Mr. Wheeler. 2-5 M. T. W. T. F. Woodshop.

Instruction will be given in bench-work, the use of wood-working machines, and the construction and finishing of projects suitable for wood-working classes in the junior and senior high schools. Special attention will be given to the problems of selecting suitable equipment and its installation.

M. E. s134. Mechanical Drawing for Industrial Arts and Vocational Teachers. Fifteen hours a week; four credits. Mr. Foster. By arrangement. P. 106.

Drawing-room practice twelve hours per week and recitation three hours per week. Lettering, instrument practice, orthographic projection, drawing from objects, and intersections and developments will be studied. Working drawings of projects that may be used in shop work will be made. Drawing room fee $1.00.

ENGLISH

Eng. s101. Rhetoric and Composition. Five hours a week; three credits. Mr. Harrison. 12 M. T. W. T. F. Pu. 104.

For credit or to remove condition in first-year college English. Study of words: spelling, derivation, definitions, synonyms. Structure of sentences, paragraphs, and whole compositions. Introduction to the writing of description, narration, exposition, and argument. Short exercises and practice papers. Readings in class as drill in accurate interpretation and as models.

Eng. s130. Technical Writing. Five hours a week; three credits. Prerequisite: English 101. Mr. Harrison. 8 M. T. W. T. F. Pu. 104.

The principles of composition applied to the writing of reports and other engineering papers; illustrative readings; practice in writing frequent short papers; a thesis as model of the paper to be presented for advanced degree, read before a scientific society, or published in a technical journal. Conferences.

Eng. s202. Advanced English Grammar. Five hours a week; three credits. Mr. Harrison. 9 M. T. W. T. F. Pu. 104.

For teachers of English in high schools or in the grades, and for journalists and other creative writers. The science of grammar and the art of its application. The history of forms, inflections, and idioms where helpful in understanding present usage.

Eng. s209. The Short Story. Five hours a week; three credits. Prerequisite: English 101. Mr. Harrison. 10 M. T. W. T. F. Pu. 104.

Development, structure, types, and style of the short story. The more important writers in this form. The contemporary short story in a collection of representative stories and in current periodicals. A manual on the writing of a short story. Practice in writing narratives of fact and of fiction. Individual conferences.

Eng. s226. Modern Drama. Five hours a week; three credits. Elective. Prerequisite: English 101. Mr. Ladu. 8 M. T. W. T. F. Pu. 105.

A study of representative modern plays, beginning with those of Ibsen. Special attention will be given to contemporary English and American productions. The drama will be considered as a vehicle of interpretation of modern thought.

Eng. s235. Victorian Poetry. Five hours a week; three credits. Elective. Prerequisite: English 101. Mr. Ladu. 9 M. T. W. T. F. Pu. 105.

A study of the principal poets of the Victorian era. Emphasis will be placed on the works of Tennyson and Browning.

Eng. s319. The Essay. Five hours a week; three credits. Prerequisite: English 101. Mr. Harrison. 11 M. T. W. T. F. Pu. 104.

A course in advanced composition and in appreciation of this important literary form, looking especially toward creative writing. Style and content of the literary, non-technical essay. Various types of formal and informal essays read as models of structure, mechanics, and material. Essays written in several styles.

Eng. s332. The Romantic Period. Five hours a week; three credits. Elective. Prerequisite: English 101. Mr. Ladu. 11 M. T. W. T. F. Pu. 105.

A study of representative poems of Wordsworth, Coleridge, Byron, Shelley, and Keats, prefaced by a review of eighteenth century forerunners of Romanticism. Attention will be given to the Romantic interest in nature and individualism, and to the contribution of the Romanticists to poetic style.

Eng. s337. Contemporary American Literature. Five hours a week; three credits. Elective. Prerequisite: English 101. Mr. Ladu. 12 M. T. W. T. F. Pu. 105.

A study of the leading American writers of the present century, and an attempt to interpret their works against the social background of the period. Some of the chief writers to be studied are as follows: Dreiser, Lewis, Willa Cather, Anderson, in the realm of fiction; Frost, Robinson, Sandburg, Masters, Amy Lowell, in that of poetry; the dramas of O'Neill, and the general literary activity of Mencken will also receive attention.

GEOLOGY AND PHYSICAL GEOGRAPHY

Geol. s101. Earth History. Five hours a week; three credits. Mr. Stuckey. 9 M. T. W. T. F. Pr.

Open to both college students and teachers who are interested in a better understanding of the world about them.

An introductory course in general geology dealing with the changes which have taken place in the earth and the physical and life processes which have brought about these changes. The first half of the course deals with the processes of physical and dynamical forces while the second half deals with the historical development of the earth as it has been affected by those forces and by life processes.

Geol. s105. Physical Geography. Three lectures; four hours laboratory and field work; three credits. Equivalent to the regular course in physical geography given in the third term of the college year. Mr. Stuckey. 10 M. T. W. T. F. Pr.

The course is intended to give those interested in general science and in teaching a better appreciation of physical geography. It will include an account of the earth as a planet; the atmosphere; the development of winds and rain; changes in the earth's crust; and the development of relief features and physiographic provinces.

The work of running water, ground water, wind, snow and ice, and forces within the earth as they affect the relief features will be taken up in some detail.

The course will also include a brief consideration of the physical geography of North Carolina.

Geol. s291. Geology of North Carolina. Three lectures; four hours laboratory; three credits. Mr. Stuckey. 12 M. W. F. Laboratory by arrangement. Pr.

Elective for students in the Schools of Engineering and Science and Business who have had Geol. 101 or 120.

Also open to teachers who are interested in the geology of North Carolina and who may be interested in helping students to collect and assemble groups of the common rocks and minerals from different sections of the State.

The course will cover the physical geography, general geology, common rocks and minerals, and mine and quarry products of the State.

HISTORY

Hist. s101c. Commercial Geography (Commercial and Industrial.) Eight hours a week; four credits. Mr. Moen. 11 M. T. W. T. F. Pe. 109.

This course is designed to prepare teachers of geography in the high schools as provided for in the plan of High School Reorganization as well as for

students in the School of Science and Business. Geographical conditions affecting industries production and commerce of the world; development and relations of commercial areas to location and availability of resources: markets and transportation routes.

Hist. s201b. Modern European History. Five hours a week; three credits Mr. Lefler. 9 M. T. W. T. F. Pu. 6.

The political and social history of Europe from 1789 to 1870. A survey of the French Revolution and Napoleon; the era of Metternich; democratic reforms and revolution; the Industrial revolution; and the growth of nationalism to 1870.

Hist. s209. Government. Five hours a week; three credits. Mr. Lefler. 10 M. T. W. T. F. Pu. 6.

Organization and activities of our local, State and National governments, party politics; economic, social, and legal factors in the functioning of government.

Hist. s302. Recent U. S. History. Five hours a week three credits. Prerequisite: History 101. Mr. Lefler. 8 M. T. W. T. F. Pu. 6.

The Civil War, reconstruction, development of West and South, transportation, rise of big business and organized labor, political parties, movements for reform, the free silver movement, war with Spain, American expansion, rise of the Progressive Party, Roosevelt, Taft and Wilson; the World War and problems of Reconstruction, the Harding-Coolidge administration.

Hist. s303. History of North Carolina. Five hours a week; three credits. Prerequisite: History 101. Mr. Lefler. 12 M. T. W. T. F. Pu. 6.

The purpose of this course is to give the teachers of North Carolina and others a general view of the political, economic, and social development of North Carolina from colonial beginnings to the present day. A brief survey will be made of the settlement of North Carolina, the various racial groups which colonized agriculture, industry, and commerce in the colonial era, and the relations of the province to England. A more detailed study will be made of North Carolina between the Revolution and the Civil War, emphasis being given to North Carolina and states' rights, social conditions, slavery and the free negro, agriculture and industry, and the beginnings of public school education. Particular emphasis will be placed on the recent development of the state, the rise of textile, tobacco, and other industries, the development of agriculture, public schools and higher education, good roads, and other factors in recent North Carolina progress.

MATHEMATICS

Math. s101. Algebra. Ten hours a week; five credits. Prerequisite: Algebra to Quadratics and Plane Geometry. Mr. Mumford. 11-1 M. T. W. T. F. P. 101 B.

This course includes the progressions, binomial theorem, undetermined coefficients, logarithms, compound interest and annuities, permutations, combinations, the general theory of equations, the solution of higher equations, etc.

Math. s102. Solid Geometry. Ten hours a week; five credits. Prerequisite: Plane Geometry. Mr. Mock. 11-1 M. T. W. T. F. P. 203.

The three books of Solid Geometry, including numerous original exercises, are covered in this course.

Math. s103. Plane Trigonometry. Ten hours a week; five credits. Prerequisite: Algebra through Quadratics and Plane Geometry. Mr. Fisher. 8-10 M. T. W. T. F. P. 209.

Definitions of the trigonometric functions, derivation of formulæ, solutions of plane triangles, solutions of many practical problems, etc.

Math. s104. Analytical Geometry. Ten hours a week; five credits. Prerequisite: Mathematics 101, 103. Mr. Mumford. 8-10 M. T. W. T. F. P. 101 B.

Loci of equations, the straight line, circle, parabola, ellipse, hyperbole, and the general equation of the second degree.

Math. s201. Differential Calculus. Ten hours a week. Five credits. Prerequisite: Mathematics 104. Mr. Mock. 8-10 M. T. W. T. F. P. 203.

An elementary course on the fundamental principles of the Calculus, including the development of the formulæ for differentiation with their applications to problems in rates, maxima and minima, etc.

Math. s202. Integral Calculus. Ten hours a week; five credits. Prerequisite: Mathematics 201. Mr. Fisher. 11-1 M. T. W. T. F. P. 209.

Development of formulæ for integration and their application to definite integrals, areas under curves, lengths of curves, volumes of solids, centers of gravity, centers of pressure, and moments of inertia.

*MODERN LANGUAGES

French

Mod. L. s104. French Prose. Five hours a week; three credits. Mr. Hinkle. 8 M. T. W. T. F. Pe. 212.

This course consists of readings and translations based upon selections from representative modern French authors. Rapid reading and sight translation are stressed.

Mod. L. s313. French Prose Masterpieces. Five hours a week; three credits. Mr. Hinkle. 9 M. T. W. T. F. Pe. 212.

This is a reading translation course developing facility in French for purposes of investigation. The class work is supplemented by lectures and reports in such a way as to give a general survey of French literature.

German

Mod. L. s102. Elementary German. Five hours a week; three credits. Mr. Hinkle. 10 M. T. W. T. F. Pe. 212.

This course is intended for students who have had little or no previous training in German as well as those who may wish to review the elements of German grammar and pronunciation. It consists of reading and translation with the elements of grammar. Practice in the pronunciation and understanding of German is given by means of dictation and oral practice.

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*NOTE. Courses in this department may be taken for double credit with the consent of the teacher concerned and the approval of the Director of the Summer School.
The courses in French and Spanish are given alternately.

Mod. L. s105. German Prose. Five hours a week; three credits. Mr. Hinkle. 10 M. T. W. T. F. Pe. 212.

This course consists of readings and translations based upon representative German authors. Reading and sight translations are stressed. The class work is supplemented by lectures and reports in such a way as to give a general survey of German literature.

Mod. L. s304. Scientific German. Five hours a week; three credits. Mr. Hinkle. 10 M. T. W. T. F. Pe. 212.

This is a reading translation course in scientific German literature. A great deal of attention is given to the study and analysis of German scientific constructions, and a basis is laid for the development of a scientific vocabulary. Open to students who have had two years high school German or one year of college German.

Spanish

Mod. L. s103. Elementary Spanish. Five hours a week; three credits. Mr. Hinkle. 11 M. T. W. T. F. Pe. 212.

This course is intended for students who have had little or no previous training in Spanish. It consists of reading and translation with the elements of grammar. Practice in the pronunciation and the understanding of Spanish is given by means of dictations and oral practice.

Mod. L. s106. Spanish Prose. Five hours a week; three credits. Mr. Hinkle. 12 M. T. W. T. F. Pe. 212.

This course consists of readings and translations based upon representative Spanish authors. Reading and sight translations are stressed. The class work is supplemented by lectures and reports in such a way as to give a general survey of Spanish literature.

PHYSICS

Physics s110. General Physics and Physics for Textile Students. Four or eight credits. Five hours class work, one 2½ hours laboratory each week for four credits. Double this for eight credits. Mr. Heck. 9 M. T. W. T. F. 2-4 Tu. 9-11 M. T. W. T. F.; 2-4 T. T. P. & E. 212.

Since Physics has become a required subject in the high school curriculum there have not been found enough teachers who can teach it and some other science. This course has been designed especially to help supply this demand, giving a teacher a good general survey of the whole field. The course will be given by well demonstrated lectures, textbook study, and laboratory work. Emphasis will be placed on practical elements of the scientific life and activity of today and the general ideas of the nature of things as revealed by recent research. The subject-matter of the course is divided into five sections. General machines and force action will be the first section, heat and weather phenomena the second, sound and the physical basis of music the third, light and color the fourth, and electricity and its applications the fifth. One may take the class work without the laboratory, but it is recommended that students register for both.

As the course also carries college credit and some may desire to take only the second half, the first lecture each day will be given to the sections of the subject numbered one to three, as indicated above, while the second lecture each day will be devoted to covering sections four and five. One afternoon laboratory will be given to each half of the subject each week.

Physics s104. Five or ten credits. Mr. Dixon. 8 M. T. W. T. F.; 2-4 M. W.; 8-10 M. T. W. T. F.; 2-4 M. T. W. T. F. P. & E. 212.

An advanced treatment of General Physics. First, second, or third terms work may be taken or any two terms taken simultaneously.

Graduate courses in physics will be given if there is sufficient demand.

Physics s107. Descriptive Astronomy. Five hours a week; three credits. Mr. Heck. 12 M. T. W. T. F. P. & E. 212.

A descriptive course covering the most interesting elements in the study of the sun and planets and the stars. The modern interpretation of the universe as a whole given in this course makes it valuable as a background to a student or teacher of any subject. Observation periods, using the telescope on top of the physics building, will be substituted at times for class lectures.

Physics s411. Research.

PHYSICAL EDUCATION

NOTE.—Summer School students are very desirous of getting in Coaching Courses but find it difficult to schedule them in addition to other required subjects. The Coaching Courses of the regular term have been combined, to make it possible for students to get instruction in all the major sports if they so desire. These classes meet daily, each sport covering one-half the summer term.

P. E. s112. Theory and Practice Football Coaching. Three hours theory, one hour practice; two credits. Mr. Miller. By arrangement. Gym.

This course will cover the equipment, schedule making, rules, individual position play, offensive and defensive team play, individual technique, team strategy, training and conditioning.

P. E. s113. Theory and Practice Basketball Coaching. Three hours theory, one hour practice; two credits. Mr. Miller. By arrangement. Gym.

This course will cover the equipment, schedule making, rules, individual technique, offensive systems, defensive systems, training and conditioning.

P. E. s114-115. Theory and Practice Track and Baseball Coaching. Five hours theory, one hour practice; three credits. Mr. Miller. By arrangement. Gym.

Track will be covered the first half of the term. The equipment, rules, individual technique, practice organization, administration of meets will be thoroughly discussed and opportunity given for practical demonstrations. Baseball will be covered the last half of the term covering individual technique in all fundamentals of individual play, offensive and defensive baseball.

P. E. s117. Physical Education and Recreational Programs. Five hours theory, one hour practice; three credits. Mr. Miller and Miss Nash. By arrangement. Gym.

This course is designed to aid those teaching in smaller high schools and grades to meet the demand made of them in assisting in the physical education programs of their school. Both the formal work consisting of calisthenic drill, marching, dancing, and apparatus work and the informal work consisting of group games, sports and efficiency tests will be covered. The organization and the administration of the class work will be stressed. Mr. Miller will teach the men's section in this course and Miss Nash will teach the women's section.

POULTRY SCIENCE

Poul. s302. Poultry Nutrition. Six weeks course; three credits. Mr. Williams. 8 M. T. W. T. F. R. 205.

This covers the field of poultry nutrition including poultry physiology of digestion, absorption, metabolism, elimination of waste, requirements of animal and vegetable proteins and of fats and carbohydrates; mineral requirements for the body function and body growth, vital elements, deficiency of feed stuffs, digestibility and nutritive ratio for different feeding purposes, a discussion of grains and mill by-products, animal feeds, green feeds, mineral supplements, feed stuffs that are injurious, spoiled and diseased, rations and methods of feeding laying hens, for growth, fattening, breeding stock, handling layers under artificial lights. Estimate possible production. Feeding turkeys, ducks, geese and pigeons.

Poul. s304. Poultry Diseases. Five hours a week for six weeks; three credits. Mr. Dearstyne. 10 M. W. F.; 2-4 M. W. R. 205.

Three one-hour recitations and two two-hour laboratory periods a week. Medical parasitology, poultry plant problems and control. Systematic study of non-contagious and contagious diseases and practical means of control. Serotherapy, vaccination and agglutination tests as applied in poultry disease control work. Autopsies and means of recognition of disease and laboratory technique on the detection of the presence of contagious diseases.

Poul. s315. Laboratory Diagnosis. Six weeks course; three credits. Mr. Greaves. 10 M. T. W. T. F. R. 205.

Poultry diseases; autopsies studied in gross pathological changes produced by disease. Identification by laboratory studies of disease producing organisms affecting the domestic fowl; artificial infection for diagnostic practice, including clinical, hematological and respiratory studies. Parasitic diseases and the life cycle of intestinal and other parasites. Study of infection cycles of contagious diseases. Prophylactic principles as applied to prevention of contagious diseases in the domestic fowl.

Poul. s408. Graduate Seminar. Three credits. Mr. Dearstyne.

SOCIOLOGY

Soc. s102. Introductory Sociology. Five hours a week; three credits. Mr. Winston. 10 M. T. W. T. F. Pu. 8.

This course offers an inductive introduction to the field of Sociology by taking up a number of social problems which are already somewhat familiar to every one. These problems confronting every community and our general citizenery. The outstanding problems to be considered are: poverty, crime, divorce, immigration, population and race problems. This course, therefore, is a natural introduction to the Sociology Courses, which deal more directly with social theory.

Soc. s103. General Sociology. (2nd term). Five hours a week; three credits. Mr. Winston. 9 M. T. W. T. F. Pe. 108.

Required of sophomores in Business and Agricultural Administration and of juniors in Industrial Management. Elective for others in School of Science and Business.

The course deals first with the basic principles of sociology, then analyzes general social organization.

Soc. s300. Criminology. Five times a week; three credits. Prerequisite: Soc. 103. Mr. Winston. 8 M. T. W. T. F. Pe. 108.

This course will take up the causes and conditions leading to crime, and study the methods of handling criminals. It will discuss the psychological foundations leading to criminal behavior and investigate the influence of environment factors in producing crime.

Soc. s307. Race Relations. Five hours a week; three credits. Prerequisite: Soc. 103 and 6 additional term-credits in Sociology. Mr. Winston. 12 M. T. W. T. F. Pe. 108.

The race problem in America and other countries. Social, economic, educational status of racial groups. Racial attitudes. A consideration of the importance of the race problem in our national life.

Soc. s311. Rural Sociology. Five hours a week; three credits. Prerequisite: Soc. 103 and 9 additional term-credits in Sociology. Mr. Winston. 11 M. T. W. T. F. Pe. 108.

Required of juniors in Agricultural Administration. Elective for others.

Rise of rural problems, ideals for rural life, factors aiding or hindering social conditions, improvements.

TEXTILES

Tex. s1. Yarn Manufacture. Special course for Mill Men. Mr. Hilton. By arrangement. Textile Building.

This subject will be divided into picking, carding, and spinning. It has been designed to meet the needs of young men working in cotton mills. The course will consist of lectures and practical work on machines in order that a man may specialize on any one or all the subjects and spend his whole time in the Textile School. Lectures will be given at specified hours, and the remaining time will be spent with practical demonstration.

Tex. s2. Loom Fixing, Designing, Fabric Analysis, and Calculations. Special courses for Mill Men. Mr. Nelson, Mr. Hart. By arrangement. Textile Building.

The subjects taught will be plain, drop box and fancy loom fixing. Elementary designing will be given as well as designing for special fabrics, such as leno. Starting up warps and fixing looms for fine and fancy fabrics will be demonstrated in connection with the operation of the looms. Lectures will be given to coördinate the theoretical with the practical. Any or all subjects may be studied. A mill man desiring to spend his whole time in the Textile School will be permitted to do so.

Tex. s102. Yarn Manufacture I. Two or four credits. Mr. Hilton. By arrangement. Textile Building.

Mixing of cotton. Openers. Pickers, Cards, Drawing Frames. Description and setting of different parts. Calculations for production, speeds, and drafts. Mechanical and electrical stop motions, and weighing of rolls.

Tex. s103. Power Weaving. Two or four credits. Mr. Nelson, Mr. Hart. By arrangement. Textile Building.

Operation of plain and gingham looms. Construction of auxiliary motions on plain looms. Cams and their construction. Automatic looms, construction and operation. Pattern chain building for gingham looms. Construction and value of pattern multipliers. Timing of drop-box motion, and other studies.

Tex. s115. Textiles for Teachers. Five hours a week; three credits. Mr. Nelson. 8 M. T. W. T. F. Textile Building.

This course is designed to give a fundamental knowledge of fabrics. It will include a study of various fabrics and their selection and adaptability to different uses. Various methods of distinguishing fabrics made from different materials such as cotton and rayon, cotton and wool, wool and silk, and other combination of yarns will be given and analysis made of the fabrics. In addition, a general survey of the various processes through which cotton passes in its transition from the raw material to the finished product will be studied.

Tex. s201. Yarn Manufacture II. Two, four or six credits. Mr. Hilton. By arrangement. Textile Building.

Construction of sliver lapper; ribbon lapper; comber; description and setting of different parts; care of machines; fly frames; builder and differential motions; roll setting; calculations for draft, twist, lay, tension, speed, and production.

Tex. s202. Dobby Weaving. Two, four or six credits. Mr. Nelson, Mr. Hart. By arrangement. Textile Building.

Preparation of warps for weaving fancy patterns on dobby looms; drawing warps in harness; starting up warps in looms; construction and fixing single and double index dobby, also dobby for weaving border patterns; springs and spring boxes for harness; pattern-chain building; calculations for heddles, weight of fabrics, loom production.

Tex. s203. Fabric Design and Analysis. Two, four or six credits. Mr. Hart. By arrangement. Textile Building.

Construction of fancy weaves, such as broken twills, curved twills, entwining twills, granite weaves. Imitation leno; honeycomb weaves; fabrics backed with warp or filling; fabrics ornamented with extra warp or filling; combining weaves together to produce new patterns.

Analyzing samples of fancy fabrics for design, drawing in draft, reed and chain plan. Calculating particulars to reproduce fabric from data obtained from sample.

W. & D. s402. Textile Fabrics: Their qualities and uses. Five hours a week; three credits. Mr. Nelson. By arrangement. Textile Building.

Analysis and illustrations of standard, fancy and novelty fabrics. Determination of fabric content. Construction of fabrics. Determination of quality in fabrics. Common defects in fabrics and their causes. Methods of testing fabrics for strength, elongation and durability.

ZOOLOGY

Zool. s202. Economic Entomology. Five times a week; three credits. Required of sophomores in Biological Science and of juniors in Agriculture. Prerequisite: Zool. 101. 8 M. W. F. four hours laboratory by arrangement. Mr. Mitchell. Z. 8.

A general study of the insects, with particular reference to their economic importance, placing special emphasis on the control of the more important species occurring in North Carolina.

Zool. Ex. 220. Animal Nature Study. By arrangement. Three credits. Prerequisites: Zool. 101, 202 or 203. Mr. Metcalf. Z. 102.

This course is intended primarily for grade school teachers and high school science instructors who desire to enlarge their knowledge of the animal life around them so that they may use the animals from their own localities in their classes. All of the animals which may be studied successfully without the aid of the microscope are taken up. Field collection and observations are used as a basis for this course.

Zool. s400. Graduate courses will be given if requested.

APPLICATION FOR ADMISSION

TO

STATE COLLEGE SUMMER SCHOOL

Name in full _____

Home Address: P. O. _____, R. F. D. _____

County _____, State _____

Courses desired _____

_____

Are you a high school graduate? _____; Have you attended any other college? _____

Name _____

In case of sickness notify _____

Do you expect to occupy a dormitory room? _____

Church preference _____

Date of application _____

(As soon as you decide to attend State College Summer School, please fill out above blank and mail to the Director.)

STATE COLLEGE RECORD

VOL. 31 MARCH, 1932 No. 3

Summer School

JUNE 13—JULY 22, 1932

Announcement of Courses

North Carolina State College
of
Agriculture and Engineering

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RALEIGH, N. C.

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Raleigh, N. C.

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Professor of Physics

JOHN THOMAS HILTON, Diploma Bradford Durfee Textile School.....*Textiles*
Associate Professor of Yarn Manufacture

J. HENRY HIGHSMITH, A.B., M.A., LL.D.....*Education*
Director, Division of School Inspection

LAWRENCE EARL HINKLE. B.A., M.A., D.Sc. es L.....*Modern Language*
Professor of Modern Languages

WALTER EDWARD JORDAN, B.S., M.A., M.S.....*Chemistry*
Assistant Professor of Chemistry

JOSEPH GRANT KNAPP, B.Sc.. M.A., Ph.D.....*Economics*
Associate Professor of Agricultural Economics

ARTHUR I. LADU, A.B., M.A.....*English*
Assistant Professor of English

MARC C. LEAGER, B.S., M.S. ..... *Business Administration*
Associate Professor of Statistics and Accounting

MRS. MARION POPLIN LEGGETTE, A.B., M.S. ..... *Industrial Arts*

WILLIAM LYNDON MAYER, B.S., M.S. ..... *Education*
Professor of Education, Director of Registration

JOHN FLETCHER MILLER, B.Pd., B.P.E. ..... *Physical Education*
Professor of Physical Education

THEODORE BERTIS MITCHELL, B.S., M.S., D.Sc. ..... *Zoology*
Assistant Professor of Zoology

HARRY LEWIS MOCK, A.B. ..... *Mathematics*
Assistant Professor of Mathematics

CAREY G. MUMFORD, B.A. ..... *Mathematics*
Instructor in Mathematics

THOMAS NELSON, D.Sc. ..... *Textiles*
Dean of the Textile School

JEHU DEWITT PAULSON, B.F.A. ..... *Architectural Engineering*
Assistant Professor of Architectural Engineering

ROBERT HENRY RUFFNER, B.S. ..... *Animal Husbandry*
Professor of Animal Husbandry and Dairying

MERLE F. SHOWALTER, B.A., M.S. ..... *Education*
Associate Professor of Education

CLARENCE B. SHULENBERGER, A.B., A.M. ..... *Business Administration*
Associate Professor of Accounting

IVAN VAUGHAN D. SHUNK, A.B., A.M., Ph.D. ..... *Botany*
Associate Professor of Botany

JASPER LEONIDAS STUCKEY, A.B., A.M., Ph.D. ..... *Geology*
Professor of Geology

LILLIAN PARKER WALLACE, A.B., M.S. ..... *Education*
Assistant Professor, Meredith College

FRED BARNET WHEELER, B.E., M.E. ..... *Wood Shop*
Assistant Professor of Furniture Manufacturing

LARRY ALSTON WHITFORD, B.S., M.S. ..... *Botany*
Instructor in Botany

LEON FRANKLIN WILLIAMS, A.B., A.M., Ph.D. ..... *Chemistry*
Professor of Organic Chemistry

NORWOOD WADE WILLIAMS, B.S., M.S. ..... *Poultry*
Assistant Professor of Poultry

SANFORD RICHARD WINSTON, B.A., Ph.D. ..... *Sociology*
Associate Professor of Sociology

SUMMER SESSION, 1932

The nineteenth Summer Session of the North Carolina State College of Agriculture and Engineering, which begins Monday, June 13th, and closes Friday, July 22nd, has broadened considerably its instruction, particularly by offering additional courses. In the courses given, the work will be directed primarily to the needs of teachers in secondary education. The usual technical courses will also be offered, as well as courses for teachers of Industrial Arts who hold a certificate of Grammar Grade C or higher.

In addition to the subject-matter courses open to all students who have graduated from high school and particularly suitable for those persons preparing to teach in the secondary schools, there will be courses in the methods of teaching the various high school subjects. There will be offered advanced courses in the field of education, dealing with Philosophy, History of Education and Psychology. The purpose of these is to build upon the several courses in Education that have been given heretofore and which will be repeated in 1932.

The State College Summer School is desirous of using its faculty and laboratories, which are particularly well prepared and equipped in the scientific and technical fields, to meet the rapidly developing needs of the State. The Summer School is, however, making ample provision for those persons who want training in the advanced academic subjects, and is providing the best of instruction in the Liberal Arts studies.

HIGH SCHOOL PRINCIPALS AND SCIENCE TEACHERS

There will be offered for principals and teachers of high schools, both professional and subject-matter courses. Special courses in methods of teaching high school science, together with courses in the various physical sciences, will occupy a large place in the Summer School. This is made necessary by the demand throughout the State for professionally trained teachers of science in the secondary schools.

Dr. J. Henry Highsmith, Director, Division of School Inspection, State Department of Public Instruction, will have charge of the general courses for superintendents, high school principals, and teachers. Professor M. F. Showalter will give the courses in special methods for high school teachers. An effort will be made to help the teachers in the planning of laboratories for high school science and in the proper use of laboratory equipment. *Teachers planning to take this science course are requested to bring their high school texts.*

AGRICULTURE

A six-weeks course in professional and technical subjects will be given for the teachers of agriculture. It is designed for both the teachers already in service, and for prospective teachers of agriculture in the vocational schools.

COTTON CLASSING

The courses in Cotton Classing are arranged to instruct the producer in grading staple, to induce him, in consequence, to try to grow cotton of better staple, and to aid him in selling his product to better advantage. They are open also to buyers of cotton. The courses are arranged for young and middle-aged men, and are not intended for boys, nor for men who lack earnestness of purpose. There are no entrance requirements for the Cotton Classing courses except that the applicant should have a good English education.

INDUSTRIAL ARTS

During the Summer School emphasis will be given to the preparation of teachers of industrial arts for the various communities of North Carolina. The rapid growth of industrial education in our State is creating a demand for supervisors and teachers who are competent to develop it in the right direction. Courses will be given in shop practice, mechanical drawing, methods of teaching, subject-matter, and administration.

Supervisors and teachers are needed for the work in the junior and senior high schools, part-time and continuation schools, and evening schools. The need is for those who are familiar with both general and vocational education and are capable of placing the proper emphasis on the courses to be outlined for a particular locality.

Industrial arts education depends largely upon the soundness of the philosophy concerning the type of training which underlies the introduction of industrial studies. For this reason those professionally minded teachers with vision will welcome courses giving them a better basis for their work in the classroom.

Courses in Textiles designed for men who are employed in the manufacturing plants, as well as courses for teachers who are employed in the textile communities, will be given. These courses will be arranged on a unit basis in order to meet the needs of the various groups who may wish to come to the College for different periods.

VOCATIONAL GUIDANCE

Guidance is recognized as a part of the work of each teacher in the school. Pupils of all ages require assistance in their growth and progress through their school problems. Each stage of school development as elementary, junior high, senior high, and college requires special attention which the individual teacher may render. In addition to the work done in the classroom, there is that of the school counselor and director of the work whose duty it is to provide materials and programs of work, together with the care of such special cases as requires specific aid.

Vocational guidance, Ed. 320, is a beginning course for advanced undergraduates and graduates, also for teachers in service who wish help in guidance activities. Occupational Counseling, Ed. 412, is a graduate course for those who have had Ed. 320 and some experience in teaching, and those who have had a wider experience in school and industry. Closely correlated with these courses are those in Psychology, Sociology, Economics and testing.

INDUSTRIAL ARTS FOR ELEMENTARY TEACHERS

The purpose of the courses in Industrial Arts for the Elementary School is to create interest in these problems using them to motivate the Elementary School subjects and to prepare teachers and supervisors who will become leaders in introducing this work in their school systems. Credit for these courses may be used either in raising or renewing certificates. The courses will be open only to those who hold a Primary or Grammar Grade C Certificate or one of higher grade.

Teachers desiring to raise or renew their certificates will take the first two of the courses in the list following, and one course selected from the remainder of the list.

Ed. s353. The Theory of Industrial Arts in the Elementary School. Five hours a week; three credits.

***Ed. s354. Practical Arts Problems.** Ten hours a week; three credits.

* A fee of $1.00 will be charged those taking Ed. s354 and Ed. s355 to pay for the materials used.

Tex. s115. Courses for Teachers. Four hours a week; two credits.
Ed. s201a. Educational Psychology. Five hours a week; three credits.
Ed. s327. Standard Testing and Measuring. Five hours a week; three credits.
Ed. s328. Tests, Examinations, and Grading. Five hours a week; three credits.
Ed. s320. Vocational Guidance. Five hours a week; three credits.
***Ed. s355. Art Studies in the Elementary School.** Ten hours a week; 1½ or 3 credits.

NOTE.—The above courses are described elsewhere in this bulletin.

PHYSICAL EDUCATION AND COACHING

The Summer School will offer opportunity for coaches and teachers of physical training to take specialized courses in the Department of Physical Education. The courses in athletic coaching and physical training are arranged especially for instructors already engaged in teaching during the regular school year and for others who wish to supplement the preparation they may have received in college. The courses take up the more important problems of coaching, and are designed for the purpose of fitting men more completely to take charge of athletics and physical training in schools and colleges throughout the country, and for fitting women to coach basketball, and direct physical training programs.

Leaders in education now recognize the fundamental need of athletics as an important part of any broad educational program. The demand for competent teachers, supervisors, and directors far exceeds the supply. This is especially true in case of men qualified both in coaching and in conducting classes in physical training. Our schools are seeking men who are college trained to take charge of their athletics; men who are versed in all phases of athletic coaching and administration. Approximately thirty-six states in the Union now have adopted legislation making physical education a prescribed part of the elementary and secondary school program.

MUSIC AND ASSEMBLIES

The success of the musical organizations of the Summer School under the direction of Mrs. Lillian Parker Wallace has elicited favorable comment from friends throughout the city. These are voluntary organizations and Mrs. Wallace kindly gives her services to these groups without charge. Students interested in music should by all means bring their musical instruments with them.

Only one assembly period per week will be provided. Interesting programs will be arranged for each of these. All students and faculty members are expected to attend these assemblies.

RECREATION

There will be supervised recreation, consisting of tennis tournaments, baseball, volleyball, basketball and handball. Instruction in swimming will be provided for both men and women. The new swimming pool, lockers and showers, and other gymnasium facilities will be available to all students.

A popular occasion during the 1931 Summer School was the ALL COLLEGE PARTY. These parties give an opportunity for the students and faculty to know each other better by playing and dancing together. More of these will be provided in 1932.

GRADUATE STUDIES

Practically all of the departments of instruction at the College that are offering undergraduate work during the Summer School will also offer graduate work. Persons who have completed their undergraduate work and desire

to continue toward an advanced degree may do one-half term's work by pursuing graduate studies during the six-weeks Summer School.

Six summer schools of six weeks in residence at the College are reckoned sufficient to fulfill the residence requirement for the Master's degree. By specific approval of the Committee on Graduate Instruction, one summer period may be spent away from the College if devoted to the preparation of the thesis required for graduation.

COLLEGE CREDIT

Beginning with 1924-1925, the regular session of State College was divided into three terms; consequently "credit," as used throughout this bulletin, refers to term credit, or twelve weeks work, unless otherwise designated. Therefore, in order for the college-credit courses to count for a full term's work, they will be given, if for five credits, ten periods a week; if for three credits, five periods a week. Since, however, no student will be allowed to take more than eighteen hours of work per week without special permission, this restriction will prevent a student's taking more than one ten-period course.

Thirty days of work during the six weeks will be accepted as meeting Summer School requirements if all the demands of the course are met. This includes one day for registration and one day for examination.

The courses for college credit are open to graduates of standard high schools, and to others of equal qualifications. These courses give college students the opportunity to remove conditions, so that they may enter their classes in the fall in full standing. They will also make it possible to secure advanced credit. The college-credit courses are also open to teachers who hold standard State certificates.

All professional courses offered will have value both for teachers' certificates and for college credit. The subject-matter courses may be counted by teachers for academic credit towards securing or raising their certificates.

PROVISION FOR BOTH MEN AND WOMEN

All courses are open to both men and women. Special accommodations in the dormitories are provided for the women, and special attention will be given to their comfort and welfare.

ACCOMMODATIONS FOR WOMEN

The fifth and sixth dormitories will be set apart for women in attendance upon the Summer School and will be under the supervision of Mrs. Verona Hoggard who has served so efficiently for several summers.

The variety of courses offered during the State College Summer School should appeal not only to those women in the teaching profession, but to those who are interested in taking advantage of these courses in preparation for other vocations and leading toward a college degree. Young women living in Raleigh who are working for a college degree should take advantage of this opportunity.

EDUCATIONAL FORUM

An open forum for discussion of timely subjects in the several larger fields of study in the college will be conducted for the benefit of Summer School students. These meetings will consist of an opening lecture by a recognized leader in his field, followed by a period of round table conference. These meetings will be as frequent as the attendance and interest will warrant.

PERSONAL PROBLEMS CONFERENCE

In view of the unusually difficult conditions under which teachers are working, the Summer School is providing for a weekly conference period of faculty and students for the consideration of urgent problems in fields in which students may not be able to get sufficient information and help in regular courses. The conference plan will have the advantage of having a number of faculty members in attendance to bring in their individual experience and points of view bearing on the problem under consideration. This plan aims to afford students the opportunity to have light thrown upon just as many of their general and individual problems as possible to provide.

OPPORTUNITY FOR INTERVIEWS

Members of the faculty will maintain office hours for consultation with students on problems related to their respective fields of work.

In addition to regular personal and professional assistance the State College faculty is always anxious to give teachers, it should be of tremendous value to teachers to attend Summer School in Raleigh where they are in easy access to the various State Departments. This is especially true in connection with personal interviews teachers may arrange with heads of Divisions in the State Department of Education. The Director's office will be glad to aid in arranging for these interviews.

SOCIAL FEATURES

A reception for students and faculty, followed by other social and recreational events such as week-end picnics and excursions, serve to foster a congenial spirit in the student body as well as to keep students physically and mentally fit for efficient study.

FEES AND EXPENSES FOR SIX-WEEKS STUDENTS

All fees and other charges are payable in advance or upon registration, and all checks should be payable to N. C. State College.

Registration	$12.50
*Tuition (except for teachers)	10.00
Classroom and Laboratory Maintenance Fee	5.00
Room Rent, each person (two or more in room)	7.50
	$35.00

*FREE TUITION FOR TEACHERS

Exemption from the payment of the $10.00 tuition fee is provided by legislative enactment for teachers now in service in the schools of North Carolina, and for residents of the State who are preparing to teach during the school year 1931-32.

Teachers now in service and students preparing to teach, who are residents of the State, will be required to sign the usual teacher's agreement to teach in North Carolina for at least six months, or to pay the tuition within one year from date of registration in case they do not teach.

All students occupying a room alone will be charged $10.00.

Students taking in excess of the normal load of 3 courses will be charged a fee of $5.00 for each additional course. Double courses will be counted as two courses.

The registration fee is not returnable after June 4. There will be no refund of room rent or tuition after June 18.

There will be a key deposit of twenty-five cents, which amount will be refunded when the key is returned.

BOARD AND LODGING

The college dining room will not be kept open during Summer School. The cafeteria, which is in the same building with the dining room, will be run for the benefit of the Summer School students and faculty.

A great many members of the faculty and regular college students eat in the cafeteria and find it very satisfactory, and about as cheap as the dining room, with the addition of greater variety from which to select, and longer periods in which to eat. The cafeteria charges are reasonable.

Students will be assigned to rooms upon their arrival at the College. Those who prefer to have their rooms reserved can send in their registration fee of $12.50 and be assigned to rooms in advance. Applicants who find that they will not be able to occupy the rooms assigned to them are required to give notice to the Director five days in advance of the date fixed for occupancy or to forfeit to the Summer School the payment advanced for registration. Those who give notice in time that they cannot attend will have their payments returned.

In case it is desired to change the room assignments, permission to do so must first be obtained from the Superintendent of Buildings. In no case may a room be taken until it has been regularly assigned.

WHAT STUDENTS NEED FOR THEIR ROOMS

The College rooms are supplied with necessary furniture. Each student, however, should bring towels, sheets, one pillow and two cases, and two bedspreads for a single bed.

REGISTRATION

All registrations will be conducted in Frank Thompson Gymnasium beginning at 9 a.m., on June 13th. Students are expected to report in person on Monday, June 12th, so that they may begin class work on the morning of Tuesday, June 14th, at 8 o'clock. Deans and Directors of Instruction will be present to advise students relative to courses.

DIPLOMAS

Students expecting to receive a degree at the end of the Summer School should come to the Office of Registration early in the session and check up on all credits; also check their names as to correctness of spelling, etc., in order that they may appear properly upon the diploma.

HOURS OF WORK

It is important to notice that teachers are required to take at least fifteen hours weekly in order to receive credit for one summer session. Additional credits may be taken by students if they have points to justify, and by teachers on approval of the Director. However, a fee of $5.00 will be charged for the extra course, and in no case will a student be allowed more than twelve credits per week. *Each student will be allowed to audit a class five times, if agreeable to instructor.*

The Summer School authorities reserve the right to cancel any course for which the registration is less than eight.

SCHOOL FOR JANITORS AND FIREMEN

For the past few summers the Mechanical Engineering Department of North Carolina State College, as a feature of the Summer School, has conducted a short course for six days for white janitors and firemen, teaching the fundamental principles of combustion, how to fire economically, and general instructions about heating systems and operation of the plant. The mornings are given to lectures and talks by members of the college faculty and representa-

tives from other state departments, and the afternoons are given over to the practical problems and inspection trips to different schools. The total cost which includes cost of registration and room rent will not exceed $3.00. Board is not furnished, but can be secured from the College Cafeteria. The 1932 school will be held the week of July 18-23 and applications for admission should be sent to Professor L. L. Vaughan, North Carolina State College, Raleigh, North Carolina.

THE ATTRACTIONS OF RALEIGH

Being the capital of one of the original thirteen states, Raleigh is unusually rich in historical collections, fine public buildings, and interesting places and memorials. It is interesting, also, for its churches, its schools, its hotels, and its office buildings, and its growing commercial and industrial activity. Opportunities will be given the students to visit the places of interest.

The various churches welcome all Summer School students to Sunday school and church services, and their pastors have taken a very friendly interest in the morning services at the College auditorium. Raleigh will be found in all respects a delightful place of residence.

THE SOCIAL CENTER

The Y. M. C. A. building will be the social center of the school. This building contains a reading room, an auditorium, several reception rooms, telephone booths, and other conveniences for the promotion of the social life of the students.

THE D. H. HILL LIBRARY

The D. H. Hill Library, one of the most beautiful libraries in the South, will be open for the use of Summer School students. Its spacious reading and periodical rooms afford an opportunity for research and study under the most pleasing conditions. The consolidation of the various departmental libraries into the central library, have greatly increased the library facilities. The library maintains a competent staff adequate to render every possible library service.

The Olivia Raney Library and the State Library will also be open to Summer School students for reference work.

FRANK THOMPSON GYMNASIUM

The Frank Thompson Gymnasium is without doubt the finest and best equipped gymnasium in the South. The main floor is 130 by 110 feet, with an intercollegiate basketball court of maximum size, and seating capacity for 2,500 spectators without using the gallery. Two maximum sized cross courts make it possible to run off class and tournament games. The auxiliary gymnasium or exercise room is 110 by 40 feet. Both of these rooms are equipped with full gymnasium apparatus and handball courts. The basement is fitted up with 1,000 private steel combination lockers. Team training rooms, equipped with private showers and lockers, a towel service room, an equipment room, and a wrestling and boxing room compose one-half of the basement. The other half is given over to the Armory.

The swimming pool is located in an annex amply lighted both by windows and skylights, and finished with white tile. The pool is 75 by 30 feet, with room sufficient to accommodate several hundred spectators.

MEETING OF YOUNG TAR HEEL FARMERS

The annual meeting of Young Tar Heel Farmers, the State-wide organization of students of vocational agriculture, will be held at N. C. State College June 24 and June 25, 1932.

COURSES TO BE OFFERED IN THE SUMMER SCHOOL

ABBREVIATIONS FOR BUILDINGS

C.—Ceramic
G.—Gymnasium
H.—Holladay
P.—Page
P. & E.—Physics and Electrical Engineering Building
Pe.—Peele Hall
Pk.—Polk Hall
Pr.—Primrose
Pt.—Patterson
R.—Ricks
T.—Textile
Pl.—Pullen Hall
W.—Winston
Z.—Zoology Building

ANIMAL HUSBANDRY AND DAIRYING

A. H. s217. Ice Cream Making. Four credits; lectures and laboratories. Prerequisite: A. H. 103. Mr. Ruffner. By arrangement. Pk. 110.

Standardizing of mixing and freezing of ice cream, sherbets, and other frozen products, and the physical principles involved; types of freezers, flavoring materials, fillers and binders; ice cream standards; the theory and practice of artificial refrigeration and its use in the ice cream plant.

A. H. s304. Herd Improvement. Five times a week; three credits. Prerequisite: A. H. 101, 102, 103. Mr. Ruffner. By arrangement. Pk. 110.

This course is designed for training students as Supervisors of Cow-Testing Associations in North Carolina. Rules and requirements for Advanced Registry Testing are studied in detail. Lectures are supplemented with laboratory work, and the student is required to do practical work in keeping feed costs, milk weights, butterfat tests necessary in the efficient management of dairy associations.

BOTANY

Botany s101. General Botany. Nature of the Higher (Crop) Plants. Two lectures; two recitations; eight hours laboratory; four credits. Equivalent to Freshman and Sophomore courses given the first quarter of the regular college year. Mr. Shunk, Mr. Whitford. 8 M. T. W. T.; 2-4 M. T. W. T. Pt. 47.

This course is offered to meet the needs of the following groups of students:

(1) Teachers of Biology who desire to enhance their knowledge of the higher plants, especially the crop plants.

(2) Agricultural workers who desire a thorough review of the fundamental structure and functions of the crop plants.

(3) College students who, having failed this course in past years, desire to change their record in regard to it.

In the course the fundamental structural and functional facts concerning the crop plant are taken up. Beginning with the flower, the work proceeds to the problems of fruits, seeds and germination of seeds. Then some fundamental biology is given relating to cells and tissues. Following this, the structural and functional data concerning roots, stems, buds, and leaves are presented. Numerous excellent microscope slides are used to present the minute structural aspects, while the functional aspects are given with the aid of a number of striking demonstration experiments. Fresh crop plant material is used throughout the course for illustrative purposes. The course closes with a thorough review and summary of the whole field studied.

Botany s202. General Bacteriology. Four recitations; eight hours laboratory; four credits. Prerequisite Bot. 102 or equivalent. Mr. Shunk. 11 M. T. W. T.; 2-4 M. T. W. T. Pt. 47.

This course, which is basic for all other work in the subject, gives an introduction to the principles of bacteriology. All of the various fundamental phases of bacteriology are taken up. Through laboratory work the student learns modern cultural methods of handling and studying bacteria. Toward the latter part of the term opportunity will be offered students to do special laboratory work on water, milk, and disease-producing bacteria, if they so desire.

Botany s203. Systematic Botany. Two lectures; eight or sixteen hours of laboratory; five credits. Equivalent to Junior and Senior courses given in third quarter of the regular college year. Prerequisite: Elementary Botany. Mr. Shunk, Mr. Whitford. 9 T. Th.; 2-5 M. T. W. T. F. Pt. 47.

This course is presented for all students who desire a more intimate outdoor acquaintance with plants, both cultivated and wild. Teachers of biology, agricultural students, and all others interested in natural history will find this course especially desirable.

The basis of the course consists of practice in identification of plants with the aid of the plant manual. Material collected on the field excursions is brought into the laboratory and studied with the aid of binocular microscopes. In the lectures, the fundamental characters of the natural plant families are pointed out and the voluntary relationships of these families are discussed. On the frequent field excursions the class will visit the floristically rich areas about Raleigh. On these excursions a few lectures will be given, dealing with the relation of plants to their environment. By the time the course closes, the student should personally be acquainted with the commoner trees, shrubs, wild flowers, and weeds of the State.

Botany s400. This graduate course will be arranged to suit the students and the Department.

CHEMISTRY

Chem. s101a. General Chemistry. Five hours in classroom and five hours in laboratory each week. Four credits. Equivalent to first term General Chemistry as given in the regular college year. Mr. Jordan, Mr. Williams. 8 M. T. W. T. F.; 1-5 M. W. 114.

Composition and properties of air and water. First principles of Chemistry, such as atomic theory, laws of chemical combination, valence, chemical formulas and equations, oxidation, reduction, behavior of gases and solutions. Study of a few typical elements, such as oxygen, hydrogen, carbon and nitrogen, together with their simpler compounds.

Chem. s101b. General Chemistry. Five hours in classroom and five hours in laboratory each week. Four credits. Equivalent to second term General Chemistry as given in the regular college year. Mr. Jordan, Mr. Williams. 9 M. T. W. T. F.; 1-5 T. W. 102.

Particular attention given to chlorine, sodium, nitrogen, sulfur, flourine, bromine, and their compounds. Study of such common substances as salt, lye, soda, carbon disulfide, prussic acid, petroleum, coal tar, acetylene; ammonia and its more interesting uses such as in ice machines; sulfur dioxide in household refrigerators and as a bleaching and germicidal agent; compounds of nitrogen in warfare and agriculture. Introduction to acids, bases, salts, ionization, hydrolysis, equilibrium, the periodic law and the new theories of the structure of the atom.

Chem. s101c. General Chemistry. Five hours in classroom and five hours in laboratory each week. Four credits. Equivalent to third term General Chemistry as given in the regular college year. Mr. Jordan, Mr. Williams. 10 M. T. W. T. F.; 1-5 W. W. 114.

Chemistry of clays, ceramics, glass, cement, soils, fertilizers, insecticides, lime, hard water, alloys, paints, storage batteries, photography, flames and explosions. Compounds and properties of phosphorous, arsenic, bismuth, silicon, boron, potassium, calcium, magnesium, zinc, aluminum, iron, tin, lead, nickel, copper, mercury, silver, gold, platinum and other less common elements. Thermochemistry, colloids and radioactivity.

Chem. s111. Qualitative Analysis. Two hours lecture with four laboratory periods of three hours each, per week. Equivalent to one term of college work. Four hours credit. Prerequisite: General Chemistry. Mr. Williams. 11 T. Th.; 8-11 M. T. W. T. F. W. 102.

A systematic study and separation of the metallic ions and non-metallic ions into their respective groups, their identification and the chemical reactions involved. The last two weeks will be given over to the complete analysis of mixed salts, compounds, and alloys.

Chem. s112. Quantitative Analysis. Two lectures and twelve hours laboratory. Equivalent to one term of college work. Four hours credit. Prerequisite: Qualitative Analysis. Mr. Williams. 10 M. W.; 2-5 M. T. W. T. F. W. 102.

This work will deal with the theory and practice of making up and standardizing acids, bases, di-chromate and permanganate solutions, also the determination of the strength of unknown acids and bases, the analysis for the per cent purity of iron ores, oxalates, sulphates, magnesium phosphate rock, etc.

Chem. s141. Organic and Biological Chemistry. Five hours a week; three credits. Prerequisite: General Chemistry. Mr. Jordan. By arrangement. W. 114.

A systematic study of the compounds of carbon with emphasis on those substances of particular importance in the life of man. Such common substances as alcohol, ether, chloroform, glycerin, quinine, carbolic acid, Rochelle salt, saccharin, aspirin and benzoate of soda. Such frequently mentioned compounds as caffeine, nicotine, wood alcohol, mustard gas, nitroglycerine, citric acid, cream of tartar, acetanilide, menthol, salvarsan, mercurochrome, formaldehyde. Such materials as gasoline, kerosene, rubber, collodion, celluloid, rayon, duco, turpentine, soap, glue, linseed oil, ethyl gasoline and such processes as decay, fermentation, rancidity, hardening of oils, tanning of leathers. Particular attention is given to carbohydrates, fats and proteins and their fate in digestion and metabolism.

Chem. s221. Organic Chemistry. Seven hours lectures with eight hours laboratory. Six credits. Prerequisite: General Chemistry. Mr. Williams. By arrangement. W. 102.

Chem. s344. Food, Nutrition and Diet. Five hours a week, three credits. Prerequisite: General Chemistry. Mr. Williams. By arrangement. W. 102.

The influence of vitamins, minerals, proteins, amino acids, carbohydrates, fat, fiber, flavor, color, enzymes, preservatives and stimulants on the body.

Chemical and physical nature of carbohydrates, fats and proteins. Digestion and metabolism. Study of the proper diet. Flesh-forming and flesh-producing diets. Diet in disease. Sour milk therapy.

While human feeding is emphasized in this course, principles here discussed are applicable to the feeding of animals as well.

ECONOMICS

Econ. s102. Introduction to Economics. Five hours a week; three credits. Mr. Shulenberger. 9 M. T. W. T. F. Pe. 109.

This course is the regular college one-term course required of all students in Engineering and is designed for those students who do not feel able to devote more than one term to the study of Economics, and also for teachers preparing to teach Economics in High Schools.

This is an elementary course in Economics. It treats of the business aspects and economic organization of society. It includes a study of the great fundamental economic laws which apply to all professions and occupations; a study of the production, distribution and value of economic goods, and a study of the institutions, agencies, and ideals which dominate, operate and control the manner, means, and methods of making a living.

Econ. s103. General Economics. Five hours a week; three credits. Mr. Shulenberger. 11 M. T. W. T. F. Pe. 109.

This is the first term of the regular college course in General Economics.

An introduction to the general field of Economics. A study of economic institutions and the general principles governing the production and distribution of wealth under the existing economic organization.

Sections for F. W. S.

Econ. s112. Accounting for Engineers. Five hours a week; three credits. Mr. Leager. 8 M. T. W. T. F. Pe. 3.

Required of students in the School of Engineering. Not open to students in Business Administration.

A survey of accounting and financial statements and records; their construction, their use and interpretation.

Econ. s201. Accounting I. Five hours a week; three credits. Mr. Leager. 9 M. T. W. T. F. Pe. 3.

Required of all sophomores in Business Administration and Industrial Management.

A course in the theory and practice of accounting, covering the essential principles of accounting as applied to the several types of business organizations, giving interpretations of the structure, form, and uses of formal business statements such as Balance Sheets, Statements of Profit and Loss, etc.

Sections for F. W. S.

Econ. s211. Business Law. Five hours a week; three credits. Prerequisite: Econ. 102 or 103. Mr. Shulenberger. 10 M. T. W. T. F. Pe. 109.

Required of seniors in Business Administration, and in Ceramic, Chemical, Civil, Architectural, Electrical, and Mechanical Engineering, and teachers of commercial subjects. Elective for other students.

A general survey of the sources of law, fields of law, contracts, agency, sales, law of partnerships and corporation, negotiable instruments, bailments and carriers, personal property, suretyship and guaranty, bankruptcy, crimes in business.

Econ. s212. Statistical Method. Five hours a week; three credits. Elective. Prerequisite: Economics 102. Mr. Leager. 10 M. T. W. T. F. Pe. 3.

A study of the elements of statistical methods, collection and analysis of statistical data. This course stresses the application of statistical methods to educational data—graphical presentation, and analysis of teachers' problems.

Econ. s265. Farm Marketing. Five hours a week; three credits. Prerequisite: Economics 102. Mr. Knapp. 9 M. T. W. T. F. R. 208.

A study of the economic principles underlying successful marketing of farm products, market organization and control, price-making forces, and critical examination of the present system of marketing farm products.

Econ. s266. Current Marketing Problems. Five hours a week for three weeks; one and one-half credits. Mr. Knapp. Prerequisite: Econ. 102 and Agr. Econ. 265 or the equivalent.

A discussion of practical marketing problems affecting teachers of vocational agriculture.

Econ. s269. Farm Accounting. Five hours a week; three credits. Mr. Knapp. 11 M. T. W. T. F. R. 208.

This course deals with the practical aspects of farm accounting, such as preparation of inventories of farm property, simple financial statements, method of keeping farm records, analysis of farm records, and the interpretation of results obtained from farm business transactions. Attention will also be given to methods of obtaining information on the business aspects of farming.

Econ. s363. Agricultural Cooperation. Five hours a week; three credits. Mr. Knapp. By arrangement. R. 114.

A study of all types of farmers' coöperative enterprises. Specific consideration is given to local community coöperation, both economic and social, farmers' buying, selling, and service organizations. A comparative study of all foreign and American farmers' coöperatives is made.

Econ. s366. Marketing Methods and Problems. Five hours a week; three credits. Prerequisite: Econ. 103, Agr. Econ. 260, Agr. Econ. 265, and three additional credits in Economics. Mr. Knapp. By arrangement. R. 114.

This course will consist of a study of the major problems in the field of agricultural marketing. The problems related to prices and the marketing mechanism will be given special consideration. The course is designed primarily for those students who have had General Economics and the first course in Farm Marketing.

EDUCATION

Courses for Undergraduates

Ed. s101. Introduction to Psychology. Five hours a week; three credits. Mr..... 10 M. T. W. T. F. H. 3.

The human receiving, connecting, and reacting nervous mechanisms; human behavior; instinctive tendencies, reflexes, instincts, and capacities; emotional behavior; habit and habit formation; the learning process; memory; thought; individual psychology.

Ed. s203a. Educational Psychology. Five hours a week; three credits. Required of students in Education; elective for others. Mr. . . . 8 M. T. W. T. F. H. 3.

Original nature and environment are analyzed in this course as to their function in the educational processes. The elementary principles of psychology are illustrated and studied as they relate to the learning process.

Ed. s203b. Educational Psychology. Five hours a week; three credits. Required of students in Education; elective for others. Mr. Garrison. 10 M. T. W. T. F. H. 3.

This part of educational psychology is concerned with the physical and mental development of the high school boys and girls. Social development; character development; emotional development and control; religious and moral development; and, mental hygiene are topics given special consideration.

Ed. s205. Introduction to Education. Five hours a week; three credits. Mr. Mayer. 11 M. T. W. T. F. Pe. 208.

This course is intended to introduce the college student to the problems of education. Some of the problems for consideration are: General and vocational education, the relation of the teacher, the school, and the community, materials and practices, the individuality in school children, educational systems at work, and measuring the outcome of teaching and learning.

Ed. s303. Problems of the High School Teacher. Five hours a week; three credits. Mr. Showalter. Prerequisite: Twelve credits in Education. 9 M. T. W. T. F. Pe. 208.

This course will cover the State requirement with reference to supervision for a high school teacher. Topics and problems discussed will include: The aims of secondary education; the high school teacher, and the high school pupil; discipline; classroom technique; training in habits of study; the curriculum; student rating; salaries; professional duties and responsibilities; school morale, and extra-curricular activities.

Textbooks, lectures, readings, and reports.

Ed. s305. Methods of Study. Five hours a week; three credits. Mr. Cook. Prerequisite: Twelve credits in Education. 11 M. T. W. T. F. Pe. 201.

A course for teachers in the methods of study and the technique of supervising study. Considers the factors of study, the chief difficulties, the general principles for improving study, and special devices. Teachers will have the opportunity of making special studies and reports on study procedures related to the subjects which they teach.

Ed. s320. Vocational Guidance. Five hours a week; three credits. Mr. Boshart. Prerequisite: Twelve credits in Education. 9 M. T. W. T. F. H. 16.

Treats of the problems of directing pupils in the study of occupations for the purpose of selecting satisfactory life work. It includes studies of the history of occupational guidance and personnel administration, principles and practices in guidance and employment, compulsory school laws, child labor legislation, and forms and records essential for school use.

Ed. s321. Vocational Education. Five hours a week; three credits. Mr. Boshart. Prerequisite: Twelve credits in Education. 12 M. T. W. T. F. H. 16.

This course is organized especially for administrators, supervisors, principals, and teachers who have not had opportunity of working out the relation-

ships governing vocational and general education. It will treat of the needs and place of vocational education in the public school system; practices in organization of vocational education and vocational guidance in trades and industries, home economics, and agriculture, including continuation schools, part-time and evening classes; and the problems related to administration of the Smith-Hughes Act.

Ed. s323. Study of Occupations. Five hours a week; three credits. Mr. Boshart. 10 M. T. W. T. F. H. 16.

Given especially for principals and school counselors who are aiding pupils in the selection of a life work, this course will be a study of the essential elements found in various occupations. Interviews with men and women in different lines of endeavor and visits to plants and offices will form a goodly part of the work which will be written up in form to present to students of high school or college grade. Readings, reports, discussions, and lectures by class members will include the following: importance in society, the kinds of work involved, advantages and disadvantages, what preparation is necessary, individual qualifications, together with matters of income and general environment.

Ed. s327. Standard Testing and Measuring. Five hours a week; three credits. Prerequisite: Twelve credits in Education or Senior Standing. Mr. Mayer. 8 M. T. W. T. F. Pu. 7.

This course will give the teacher an insight into the more common achievement, diagnostic, and mentality tests, and their use and interpretation from the standpoint of the teacher, supervisor, and administrator.

Ed. s328. Tests, Examinations, and Grading. Five hours a week; three credits. Prerequisite: Twelve credits in Education or Senior Standing. Mr. Mayer. 8 M. T. W. T. F. Pu. 7.

This course will deal with the principles and practices of building up and using classroom tests, and the principles underlying grading. (Teachers contemplating taking this course should bring textbooks that they are using in their High School Teaching.)

Ed. s330. Visual Instruction. Five hours a week; three credits. Prerequisites: Twelve credits in Education. Mr. Armstrong. 9 M. T. W. T. F. Pe. 201.

An advanced course in the psychology, methods, and technique of visual instruction; its place and limits, evaluation and expense of various aids, aids available. Practice in the making and use of practical visual aids.

Ed. s331. Problems in Visual Instruction. Five hours a week; three credits. Prerequisites: Ed. 208 or Ed. 330 and 9 other credits in Education. Mr. Armstrong. 8 M. T. W. T. F. Pe. 201.

A thorough study of educational problems pertaining to teaching through the sense of sight; psychology of sight perception; comparison of various visual aids; a study of research reports. Each student will be required to complete a brief special problem in the field of visual instruction.

Ed. s335. Public School Administration. Five hours a week; three credits. This course is intended primarily for superintendents and principals. Prerequisite: Twelve credits in Education. Mr. Highsmith. 9 M. T. W. T. F. Pe. 208.

The following problems will receive consideration:

The powers and duties of the board of education; the powers and duties of the superintendent; the county-wide plan; consolidation of schools; trans-

portation of pupils; school buildings and equipment; operation and maintenance of plant; janitor service; selection, purchase and distribution of supplies; school reports; problems pertaining to the teacher, pupil and home: educational problems of a county school system.

Textbooks, lectures, readings and reports.

Ed. s336. Problems in Secondary Education. Five hours a week; three credits. Prerequisite: Twelve credits in Education. Mr. Highsmith. 11 M. T. W. T. F. Pe. 206.

The purpose of this course is to give as practical assistance as possible to those men and women who wish to become or who are now serving as high school principals in North Carolina. Frequent reference will be made to conditions in the State. The following problems will be discussed:

Aims of secondary education; the curriculum (with special reference to the North Carolina course of study and High School organization); standards for high schools; classification of pupils; control of pupils and discipline; regulation of attendance; guidance of pupils; classroom standards; examination; marking system; interpretation of intelligence scores; supervision of study; class schedule making; duties of the principals; supervision of instruction; selection of teachers; teaching load; salaries; professional ethics.

Textbooks, lectures, readings, and reports.

Ed. s337. The Teaching of Science in the Secondary School. Five hours a week; three credits. Prerequisites: Thirty term credits in Science and twelve term credits in Education. Mr. Showalter. 10 M. T. W. T. F. Pe. 208.

The place in secondary education of the field of natural science, special aims and purposes to be achieved, principles of selection and organization of the materials of instruction, teaching techniques, and the construction and use of written tests.

Ed. s339. The Teaching of High School Geography. Five hours a week; three credits. Prerequisite: Twelve credits in Education. Mr. Showalter. 12 M. T. W. T. F. Pe. 208.

Study of the content of the high school course in Geography; the conduct of demonstration and laboratory work; the problem approach; the technique of class discussion and directing or supervising student effort.

Students taking this course should have their texts in high school Geography.

Ed. s341. The Teaching of High School Mathematics. Ten hours a week; five credits. Prerequisite: Ed. 101, 203, 212, 213 and 20 credits in Mathematics. Mr. Mumford. 11-1 M. T. W. T. F. P. 101B.

A comprehensive view of the materials of High School Mathematics will be accompanied by a discussion of the selection and use of textbooks and supplementary helps. Practice will be given in the construction and use of written examinations, and the comparative merits of standard tests will be considered. Attention will be given to adapting both the content and the methods of procedure to the needs of various groups.

Ed. s351. Organization and Administration of Part-time and Continuation Schools. Five hours a week; three credits. Prerequisites: Twelve credits in Education or administrative experience. Mr. ..... 8 M. T. W. T. F.

A study of the part-time and continuation schools as to their place in an educational system; the selection and organization of teaching ma-

terials; the preparation of type lessons; the division of time allotments; the methods of teaching, and the procedure in organization of classes. Primarily for principals and teachers who are attempting or planning to attempt work of this character.

Ed. s353. Theory of Industrial Arts in the Elementary School. Five hours a week; three credits. Prerequisite: Twelve credits in Education. Mr. Boshart. 8 M. T. W. T. F. H. 16.

A study of the value and place of Industrial Arts in the elementary school. The correlation of Industrial Arts with other school subjects; the methods of teaching and supervision, and the study of industries, with the view of selecting suitable projects for classroom use. Primarily for teachers and supervisors of the elementary schools.

Ed. s354. Practical Arts Problems. Ten hours a week; three credits. Prerequisite: Twelve credits in Education. Mrs. Leggette. 9-11 M. T. W. T. F. or 11-1 M. T. W. T. F. H. 15.

Treats of the selection and organization of suitable projects in Industrial Arts and the working out in detail of such as will meet the needs of the class. The meaning of Industrial Arts and the methods of making it a part of the regular work of the school will be discussed. For teachers in the elementary schools who have had teaching experience and who have not had special work in Industrial Arts.

Ed. s355. Art Studies in the Elementary School. Five or ten hours a week; one and one-half or three credits. Prerequisite: Twelve credits in Education. Mrs. Leggette. 9-11 M. T. W. T. F. H. 15.

A study of art work in the elementary school designed especially to aid teachers in making concrete applications in their classrooms.

Ed. s356. Clay Modeling for Public School Teachers. Five double periods; three credits. Additional work and credit if desired. Mr. Paulson. 9-11 M. T. W. T. F. C. 1.

Work will consist of modeling, moulding, casting, glazing, and firing. Problems will be selected for use in elementary and secondary schools with varying degrees of equipment.

Ed. s357. Fine Arts for Teachers. Five double periods; three credits. Additional work and credit if desired. Mr. Paulson. 11-1 M. T. W. T. F. C. 1.

Drawing in pencil, charcoal, crayon and water color from casts and from nature. Perspective theory and outdoor sketching. Lettering and poster design. Lectures in appreciation of art. Also individual instruction to advanced students.

Note: Students may, if they desire, divide their time between Practical Arts Problems, Ed. s354, and Clay Modeling for Public School Teachers, Ed. s356. The demand for more advanced work in the above mentioned courses will be satisfied when possible.

Ed. s360. Special Problems in Teaching Agriculture. Five hours a week; three credits. Prerequisite: Twelve credits in Education, including Special Methods of Teaching Agriculture. Mr. Cook. 9 M. T. W. T. F. Pe. 201.

This course is for graduates of the Department of Agricultural Education. It will consist of special individual problems and preparation of plans for

the next year's work, involving a survey of the school and community in which they are to work the coming year. From this information each student will prepare a program of agricultural education especially adapted to his school and community. It will include classroom arrangements and fixtures, library equipment, gathering specimens and illustrative materials, and the organization of courses of study.

Ed. s364. History of Education. Five times a week; three credits. Mrs. Wallace. 9 M. T. W. T. F. Pu. S.

This course will include a brief study of European Education and its influence upon the American Public School, the early development of the elementary and high schools of America, and the present tendencies of our educational system. The period from 1890 to the present will be given special consideration.

Ed. s371. Child Psychology. Five hours a week; three credits. Prerequisite: Twelve credits in Education, six of which must be in Psychology. Mr. Garrison. 9 M. T. W. T. F. H. 5.

This course will consider the results of scientific studies of mental and physical growth from infancy to adolescence. It will emphasize the bearing of instinctive tendencies and social environment on development, the emotional life of children and special problems of behavior, with their application to the training of children in the home as well as in school.

Ed. s403. Advanced Educational Psychology. Five hours a week; three credits. Prerequisite: Eighteen term credits in Education and Psychology. Mr. Garrison. 11 M. T. W. T. F. H. 5.

This course will attempt to answer the question: How is education concerned with modern psychological conceptions of, for example, original nature, principles of learning, transfer of training, attention and the higher thought processes. Special emphasis will be given to the methods and results of recent experimental work in the field of learning.

Ed. s408. Supervision—The Improvement of Instruction. Five hours a week; three credits. Prerequisite: Eighteen hours in Education. Open to college graduates only. Mr. Highsmith. 10 M. T. W. T. F. Pe. 206.

For principals of High Schools, Heads of Departments, Supervisors and Teachers.

This course is offered to meet a growing demand for supervision of High School instruction. The purpose of Supervision is the improvement of instruction.

The problems involved in the supervision of teachers; the planning and organization of supervision; the functions of supervision; rating of principals, supervisors and teachers; classroom visitation and conferences; the improvement of teachers in the service.

Textbooks, lectures, readings, and reports.

Ed. s412. Occupational Counseling. Five hours a week; three credits. Prerequisite: Ed. 320, 327. Mr. Boshart. 8 M. T. W. T. F. H. 16.

Special attention is given to counseling as it may be applied in the junior and senior high schools, colleges, or placement offices, and the method of con-

ducting individual interviews and group conferences. Information covering occupational material will be organized, evaluated, and applied to specific case studies. For teachers of experience and those familiar with personnel work.

Ed. s417. Principles of Agricultural Education. Five hours a week; three credits. Prerequisite: Eighteen credits in Education and Agriculture, twelve of which must be in Education. Students should have a good understanding of Educational Psychology and the principles and practices of agricultural education. Permission to register will be required. Mr. Cook. 9 M. T. W. T. F. Pe. 201.

The principles and practices of agricultural education in the light of the findings of educational psychology and recent investigations in education. Adapting rural and agricultural education to the changing conditions in farming and rural life.

ENGINEERING

M. E. s102. Engineering Drawing. Ten or twenty hours a week; three or six credits. Required of Engineering Freshmen. Mr. Foster. 9-1 M. T. W. T. F.; 10-12 M. T. W. T. F. P. 106.

Drawing-board work, covering lettering, orthographic projection, auxiliary projection, isometric projection, cabinet projection, intersection and develpment, working drawings, and blue-printing.

M. E. s103. Descriptive Geometry. Ten hours a week; three credits. Mr. Foster. 10-12 M. T. W. T. F. P. 106.

This work covers the representation of geometrical magnitudes, by means of points, lines, planes, and solids, and the solution of problems relating to them.

M. E. s105 Woodshop. Five or ten hours a week; one or two credits. Mr. Wheeler. 2-4 M. T. W. T. F. Woodshop.

Use of bench tools, reading blue-prints, making cabinet joints, operation and care of wood-working machinery. Correct methods of staining, varnishing, filling and gluing.

M. E. s107. Mechanical Drawing. Four, seven or ten hours per week; one, two or three credits. Mr. Foster. By arrangement. P. 106.

Drawing-board work, covering machine fastenings, pipe fittings, elementary cams, technical sketching, working drawings, tracing and blue-printing.

M. E. s118. Machine Shop I. Ten hours a week; two credits. Mr. Wheeler. 9-11 M. T. W. T. F. Woodshop.

Required of Seniors in Chemical and Juniors in Ceramic and Mining Engineering.

Instruction in the use of hand and machine tools.

M. E. s130. Metal Work. Fifteen hours a week; three credits. Mr. Wheeler. 9-12 M. T. W. T. F. Woodshop.

Instruction will be given in elementary phases of metal work, including filling, chipping, drilling, bending and forming, and problems on the drill press, lathe, and shaper. Intended for teachers of general shops where metal work will be a part of the course offered.

M. E. s132. Woodworking for Teachers. Fifteen hours a week; three credits. Mr. Wheeler. 2-5 M. T. W. T. F. Woodshop.

Instruction will be given in bench-work, the use of wood-working machines, and the construction and finishing of projects suitable for wood-working classes in the junior and senior high schools. Special attention will be given to the problems of selecting suitable equipment and its installation.

M. E. s134. Mechanical Drawing for Industrial Arts and Vocational Teachers. Fifteen hours a week; four credits. Mr. Foster. By arrangement. P. 106.

Drawing-room practice twelve hours per week and recitation three hours per week. Lettering, instrument practice, orthographic projection, drawing from objects, and intersections and developments will be studied. Working drawings of projects that may be used in shop work will be made. Drawing room fee $1.00.

ENGLISH

Eng. s101. Rhetoric and Composition. Five hours a week; three credits. Mr. Ladu. 12 M. T. W. T. F. Pu. 105.

For credit or to remove condition in first-year college English. Study of words: spelling, derivation, definitions, synonyms. Structure of sentences, paragraphs, and whole compositions. Introduction to the writing of description, narration, exposition, and argument. Short exercises and practice papers. Readings in class as drill in accurate interpretation and as models.

Eng. s202. Advanced English Grammar. Five hours a week; three credits. Mr. Clark. 9 M. T. W. T. F. Pu. 108

For teachers of English in high schools or in the grades, and for journalists and other creative writers. The science of grammar and the art of its application. The history of forms, inflections, and idioms where helpful in understanding present usage.

Eng. s226. Modern Drama. Five hours a week; three credits. Elective. Prerequisite: English 101. Mr. Ladu. 8 M. T. W. T. F. Pu. 105.

A study of representative modern plays, beginning with those of Ibsen. Special attention will be given to contemporary English and American productions. The drama will be considered as a vehicle of interpretation of modern thought.

Eng. s320. The Short Story. Five hours a week; three credits. Prerequisite: English 101. Mr. Ladu. 10 M. T. W. T. F. Pu. 105.

Development, structure, types, and style of the short story. The more important writers in this form. The contemporary short story in a collection of representative stories and in current periodicals. A manual on the writing of a short story. Practice in writing narratives of fact and of fiction. Individual conferences.

Eng. s330. Shakespeare. Five hours a week; three credits. Prerequisite: Eng. 101 and three additional credits in English. Mr. Clark. 8 M. T. W. T. F. Pu. 108.

An analysis, as regards technique and interpretation, of the following dramas: Macbeth, Othello, The Winter's Tale, Twelfth Night, and King Henry the Fifth. Reports on parallel readings will be discussed in open forum sessions.

Eng. s332. The Romantic Period. Five hours a week; three credits. Elective. Prerequisite: English 101. Mr. Clark. 11 M. T. W. T. F. Pu. 108.

A study of representative poems of Wordsworth, Coleridge, Byron, Shelley, and Keats, prefaced by a review of eighteenth century forerunners of Romanticism. Attention will be given to the Romantic interest in nature and individualism, and to the contribution of the Romanticists to poetic style.

Eng. s335. Milton. Five hours a week; three credits. Prerequisite: Eng. 101 and Eng. 220 or its equivalent. Mr. Clark. 10 M. T. W. T. F. Pu. 108.

A study in the major and minor poems of Milton, with some limited treatment of his prose. Matters of religious, educational, political and critical significance will necessarily be treated in this course.

Eng. s337. Contemporary American Literature. Five hours a week; three credits. Elective. Prerequisite: English 101. Mr. Ladu. 12 M. T. W. T. F. Pu. 105.

A study of the leading American writers of the present century, and an attempt to interpret their works against the social background of the period. Some of the chief writers to be studied are as follows: Dreiser, Lewis, Willa Cather, Anderson, in the realm of fiction; Frost, Robinson, Sandburg, Masters, Amy Lowell, in that of poetry; the dramas of O'Neill, and the general literary activity of Mencken will also receive attention.

FIELD CROPS

F. C. s1. Cotton Classing. Twenty hours a week for six weeks. No college credit. Mr. Darst, Mr. Cotner. 9-1 M. T. W. T. F. Pt. 45.

The Summer School of Cotton Classing is designed to prepare men to enter the cotton business and to enable producers to become familiar with grades, so that they may handle their cotton more efficiently from the time it opens in the field until it is baled.

Inefficient handling at the present time is causing the State a loss of millons of dollars annually. The business side of cotton transactions as well as the practical grading and stapling will be included in the course.

Experience will not be necessary for taking the course, as the class will work in groups according to previous training. Students may qualify as competent cotton classers at the expiration of this course.

The course will consist of lectures and daily practice in grading and stapling cotton samples, according to the Universal Cotton Standards, including the descriptive grades as well as the official.

The course will be given each day, with the exception of Saturday, for four hours a day.

The first period of each day will be devoted to lectures and discussions, and the remaining time will be used in the actual practice of grading and stapling of cotton. An expert from the United States Department of Agriculture will assist in this course.

The Cotton Classing course is designed for a special group, and does not carry collegiate credit. There is a flat charge of $27.50 for the whole course in Cotton Classing. Persons registered for fifty per cent or less of the course will be charged $15.00. All fees paid on or before registration.

F. C. s201. Cereal Crops. Prerequisite: General Field Crops. Five hours a week; three credits. Mr. Darst, Mr. Cotner. 11 M. W. F.; 11-1 T. Th. Pt. 26.

Lectures and recitations in history, production, cultivation, improvement, harvesting, storage, and marketing. Laboratory consists of structural studies, seed judging, variety identification, and commercial grading. Special problems in cereal production.

F. C. s210. Cotton Production, or s215. Tobacco Production. Five hours a week; three credits. Mr. Cotner. 8 M. T. W. T. F. Pt. 45.

Lectures and recitations on history, production, adaptation, types and varieties, including cultivation, harvesting, grading, and marketing, will be given. Laboratory consists of variety studies, the classing of cotton, and the grading of tobacco.

F. C. s330. Advanced Seed Judging and Grading. 12 M. W. F. 2-4 T. Th. Prerequisite: Cereals, Five hours a week; three credits. Mr. Darst, Mr. Cotner. Pt. 26.

Lectures and practice in planning, arranging and judging field crops exhibits. Study of the Federal grain and hay standards. A course planned to develop experts in the judging of field crop seeds and in the grading of grain and hays. A course designed for agricultural extension workers and vocational teachers.

F. C. s351. Advanced Study of Crops Research. Undergraduate credits. 3-9; Graduate credits, 2-6. Elective for graduates and advanced undergraduates. Mr. Darst, Mr. Cotner. By arrangement. Pt. 26

A field study of the research work and demonstration work in crops. This course will be based directly upon experimental work in progress.

The crop or crops for study will be agreed upon by the class.

F. C. s401. Crop Research. Prerequisite: Eighteen credit hours in Field Crops. By arrangement. Mr. Darst and Mr. Cotner.

GEOLOGY AND PHYSICAL GEOGRAPHY

Geol. s101. Earth History. Five hours a week; three credits. Mr. Stuckey. 9 M. T. W. T. F. Pr.

Open to both college students and teachers who are interested in a better understanding of the world about them.

An introductory course in general geology dealing with the changes which have taken place in the earth and the physical and life processes which have brought about these changes. The first half of the course deals with the processes of physical and dynamical forces while the second half deals with the historical development of the earth as it has been affected by those forces and by life processes.

Geol. s105. Physical Geography. Three lectures; four hours laboratory and field work; three credits. Equivalent to the regular course in physical geography given in the third term of the college year. Mr. Stuckey. 10 M. T. W. T. F. Pr.

The course is intended to give those interested in general science and in teaching a better appreciation of physical geography. It will include an account of the earth as a planet; the atmosphere; the development of winds

and rain; changes in the earth's crust; and the development of relief features and physiographic provinces.

The work of running water, ground water, wind, snow and ice, and forces within the earth as they affect the relief features will be taken up in some detail.

The course will also include a brief consideration of the physical geography of North Carolina.

Geol. s291. Geology of North Carolina. Three lectures; four hours laboratory; three credits. Mr. Stuckey. 12 M. W. F. Laboratory by arrangement. Pr.

Elective for students in the Schools of Engineering and Science and Business who have had Geol. 101 or 120.

Also open to teachers who are interested in the geology of North Carolina and who may be interested in helping students to collect and assemble groups of the common rocks and minerals from different sections of the State.

The course will cover the physical geography, general geology, common rocks and minerals, and mine and quarry products of the State.

HISTORY

Hist. s101c. Commercial Geography (Commercial and Industrial). Five hours a week; three credits. Mr. Shulenberger. 11 M. T. W. T. F. Pe. 109.

This course is designed to prepare teachers of geography in the high schools as provided for in the plan of High School Reorganization as well as for students in the School of Science and Business. Geographical conditions affecting industries production and commerce of the world; development and relations of commercial areas to location and availability of resources; markets and transportation routes.

Hist. s201b. Modern European History. Five hours a week; three credits Mr. Barnhardt. 9 M. T. W. T. F. Pu. 6.

The political and social history of Europe from 1789 to 1870. A survey of the French Revolution and Napoleon; the era of Metternich; democratic reforms and revolution; the Industrial revolution: and the growth of nationalism to 1870.

Hist. s209. Government. Five hours a week; three credits. Mr. Barnhardt. 10 M. T. W. T. F. Pu. 6.

Organization and activities of our local, State and National governments, party politics; economic, social, and legal factors in the functioning of government.

Hist. s302. Recent U. S. History. Five hours a week three credits. Prerequisite: History 101. Mr. Barnhardt. 8 M. T. W. T. F. Pu. 6.

The Civil War, reconstruction, development of West and South, transportation, rise of big business and organized labor, political parties, movements for reform, the free silver movement. war with Spain, American expansion, rise of the Progressive Party, Roosevelt, Taft and Wilson; the World War and problems of Reconstruction, the Harding-Coolidge administration.

Hist. s303. History of North Carolina. Five hours a week; three credits. Prerequisite: History 101. Mr. Barnhardt. 11 M. T. W. T. F. Pu. 6.

The purpose of this course is to give the teachers of North Carolina and others a general view of the political, economic, and social development of

North Carolina from colonial beginnings to the present day. A brief survey will be made of the settlement of North Carolina, the various racial groups which colonized agriculture, industry, and commerce in the colonial era, and the relations of the province to England. A more detailed study will be made of North Carolina between the Revolution and the Civil War, emphasis being given to North Carolina and states' rights, social conditions, slavery and the free negro, agriculture and industry, and the beginnings of public school education. Particular emphasis will be placed on the recent development of the state, the rise of textile, tobacco, and other industries, the development of agriculture, public schools and higher education, good roads, and other factors in recent North Carolina progress.

MATHEMATICS

Math. s101. Algebra. Ten hours a week; five credits. Prerequisite: Algebra to Quadratics and Plane Geometry. Mr. Mumford. 11-1 M. T. W. T. F. P. 101 B.

This course includes the progressions, binomial theorem, undetermined coefficients, logarithms, compound interest and annuities, permutations, combinations, the general theory of equations, the solution of higher equations, etc.

Math. s102. Solid Geometry. Ten hours a week; five credits. Prerequisite: Plane Geometry. Mr. Mock. 11-1 M. T. W. T. F. P. 203.

The three books of Solid Geometry, including numerous original exercises, are covered in this course.

Math. s103. Plane Trigonometry. Ten hours a week; five credits. Prerequisite: Algebra through Quadratics and Plane Geometry. Mr. Fisher. 8-10 M. T. W. T. F. P. 209.

Definitions of the trigonometric functions, derivation of formulæ, solutions of plane triangles, solutions of many practical problems, etc.

Math. s104. Analytical Geometry. Ten hours a week; five credits. Prerequisite: Mathematics 101, 103. Mr. Mumford. 8-10 M. T. W. T. F. P. 101 B.

Loci of equations, the straight line, circle, parabola, ellipse, hyperbole, and the general equation of the second degree.

Math. s201. Differential Calculus. Ten hours a week. Five credits. Prerequisite: Mathematics 104. Mr. Mock. 8-10 M. T. W. T. F. P. 203.

An elementary course on the fundamental principles of the Calculus, including the development of the formulæ for differentiation with their applications to problems in rates, maxima and minima, etc.

Math. s202. Integral Calculus. Ten hours a week; five credits. Prerequisite: Mathematics 201. Mr. Fisher. 11-1 M. T. W. T. F. P. 209.

Development of formulæ for integration and their application to definite integrals, areas under curves, lengths of curves, volumes of solids, centers of gravity, centers of pressure, and moments of inertia.

Math. s341. See Ed. s341 for description.

*MODERN LANGUAGES

French

Mod. L. s104. French Prose. Five hours a week; three credits. Mr. Hinkle. 8 M. T. W. T. F. Pe. 212.

This course consists of readings and translations based upon selections from representative modern French authors. Rapid reading and sight translation are stressed.

Mod. L. s313. French Prose Masterpieces. Five hours a week; three credits. Mr. Hinkle. 9 M. T. W. T. F. Pe. 212.

This is a reading translation course developing facility in French for purposes of investigation. The class work is supplemented by lectures and reports in such a way as to give a general survey of French literature.

German

Mod. L. s102. Elementary German. Five hours a week; three credits. Mr. Hinkle. 10 M. T. W. T. F. Pe. 212.

This course is intended for students who have had little or no previous training in German as well as those who may wish to review the elements of German grammar and pronunciation. It consists of reading and translation with the elements of grammar. Practice in the pronunciation and understanding of German is given by means of dictation and oral practice.

Mod. L. s304. Scientific German. Five hours a week; three credits. Mr. Hinkle. 10 M. T. W. T. F. Pe. 212.

This is a reading translation course in scientific German literature. A great deal of attention is given to the study and analysis of German scientific constructions, and a basis is laid for the development of a scientific vocabulary. Open to students who have had two years high school German or one year of college German.

Mod. L. s314. German Prose Masterpieces. Five hours a week; three credits. Mr. Hinkle. 10 M. T. W. T. F. Pe. 212.

This course consists of readings and translations based upon representative German authors. Reading and sight translations are stressed. The class work is supplemented by lectures and reports in such a way as to give a general survey of German literature.

Spanish

Mod. L. s103. Elementary Spanish. Five hours a week; three credits. Mr. ..... 11 M. T. W. T. F. Pe. 212.

This course is intended for students who have had little or no previous training in Spanish. It consists of reading and translation with the elements of grammar. Practice in the pronunciation and the understanding of Spanish is given by means of dictations and oral practice.

Mod. L. s106. Spanish Prose. Five hours a week; three credits. Mr. ..... 12 M. T. W. T. F. Pe. 212.

This course consists of readings and translations based upon representative Spanish authors. Reading and sight translations are stressed. The class work is supplemented by lectures and reports in such a way as to give a general survey of Spanish literature.

*NOTE. Courses in this department may be taken for double credit with the consent of the teacher concerned and the approval of the Director of the Summer School.
The courses in French and Spanish are given alternately.

PHYSICS

Physics s110. General Physics and Physics for Textile Students. Four or eight credits. Five hours class work, one 2½ hours laboratory each week for four credits. Double this for eight credits. Mr. Heck. 9 M. T. W. T. F. 2-4 Tu. 9-11 M. T. W. T. F.; 2-4 T. T. P. & E. 212.

Since Physics has become a required subject in the high school curriculum there have not been found enough teachers who can teach it and some other science. This course has been designed especially to help supply this demand, giving a teacher a good general survey of the whole field. The course will be given by well demonstrated lectures, textbook study, and laboratory work. Emphasis will be placed on practical elements of the scientific life and activity of today and the general ideas of the nature of things as revealed by recent research. The subject-matter of the course is divided into five sections. General machines and force action will be the first section, heat and weather phenomena the second, sound and the physical basis of music the third, light and color the fourth, and electricity and its applications the fifth. One may take the class work without the laboratory, but it is recommended that students register for both.

As the course also carries college credit and some may desire to take only the second half, the first lecture each day will be given to the sections of the subject numbered one to three, as indicated above, while the second lecture each day will be devoted to covering sections four and five. One afternoon laboratory will be given to each half of the subject each week.

Physics s104. Five or ten credits. Mr. Derieux. 8 M. T. W. T. F.; 2-4 M. W.; 8-10 M. T. W. T. F.; 2-4 M. T. W. T. F. P. & E. 212.

An advanced treatment of General Physics. First, second, or third terms work may be taken or any two terms taken simultaneously.

Graduate courses in physics will be given if there is sufficient demand.

Physics s107. Descriptive Astronomy. Five hours a week; three credits. Mr. Heck. 12 M. T. W. T. F. P. & E. 212.

A descriptive course covering the most interesting elements in the study of the sun and planets and the stars. The modern interpretation of the universe as a whole given in this course makes it valuable as a background to a student or teacher of any subject. Observation periods, using the telescope on top of the physics building, will be substituted at times for class lectures.

Physics s411. Research.

PHYSICAL EDUCATION

NOTE.—Summer School students are very desirous of getting in Coaching Courses but find it difficult to schedule them in addition to other required subjects. The Coaching Courses of the regular term have been combined, to make it possible for students to get instruction in all the major sports if they so desire. These classes meet daily, each sport covering one-half the summer term.

P. E. s112. Theory and Practice Football Coaching. Three hours theory, one hour practice; two credits. Mr. Miller. By arrangement. Gym.

This course will cover the equipment, schedule making, rules, individual position play, offensive and defensive team play, individual technique, team strategy, training and conditioning.

P. E. s113. Theory and Practice Basketball Coaching. Three hours theory, one hour practice; two credits. Mr. Miller. By arrangement. Gym.

This course will cover the equipment, schedule making, rules, individual technique, offensive systems, defensive systems, training and conditioning.

P. E. s114-115. Theory and Practice Track and Baseball Coaching. Five hours theory, one hour practice; three credits. Mr. Miller. By arrangement. Gym.

Track will be covered the first half of the term. The equipment, rules, individual technique, practice organization, administration of meets will be thoroughly discussed and opportunity given for practical demonstrations. Baseball will be covered the last half of the term covering individual technique in all fundamentals of individual play, offensive and defensive baseball.

P. E. s117. Physical Education and Recreational Programs. Five hours theory, one hour practice; three credits. Mr. Miller and Mrs. Hutchinson. By arrangement. Gym.

This course is designed to aid those teaching in smaller high schools and grades to meet the demand made of them in assisting in the physical education programs of their school. Both the formal work consisting of calisthenic drill, marching, dancing, and apparatus work and the informal work consisting of group games, sports and efficiency tests will be covered. The organization and the administration of the class work will be stressed. Mr. Miller will teach the men's section in this course and Mrs. Hutchinson will teach the women's section.

POULTRY SCIENCE

Poul. s302. Poultry Nutrition. Six weeks course; three credits. Mr. Williams or Mr. Dearstyne. 8 M. T. W. T. F. R. 205.

This covers the field of poultry nutrition including poultry physiology of digestion, absorption, metabolism, elimination of waste, requirements of animal and vegetable proteins and of fats and carbohydrates; mineral requirements for the body function and body growth, vital elements, deficiency of feed stuffs, digestibility and nutritive ratio for different feeding purposes, a discussion of grains and mill by-products, animal feeds, green feeds, mineral supplements, feed stuffs that are injurious, spoiled and diseased, rations and methods of feeding laying hens, for growth, fattening, breeding stock, handling layers under artificial lights. Estimate possible production. Feeding turkeys, ducks, geese and pigeons.

Poul. s304. Poultry Diseases. Five hours a week for six weeks; three credits. Mr. Gauger. 10 M. W. F.; 2-4 M. W. R. 205.

Three one-hour recitations and two two-hour laboratory periods a week. Medical parasitology, poultry plant problems and control. Systematic study of non-contagious and contagious diseases and practical means of control. Serotherapy, vaccination and agglutination tests as applied in poultry disease control work. Autopsies and means of recognition of disease and laboratory technique on the detection of the presence of contagious diseases.

Poul. s306. Commercial Plant Management and Commercial Incubation. Five hours a week; three credits. Mr. Williams. M. T. W. T. F. Ricks.

A study of the construction and operation of commercial incubators. The development of community hatcheries. Incubator sanitation. The development of commercial poultry plants and their operation. Course includes an outline of breeding practices, culling, egg grading, and marketing.

SOCIOLOGY

Soc. s102. Introductory Sociology. Five hours a week; three credits. Mr. Winston. 11 M. T. W. T. F. Pu. 8.

This course offers an inductive introduction to the field of Sociology by taking up a number of social problems which are already somewhat familiar to every one. These problems confronting every community and our general citizenery. The outstanding problems to be considered are: poverty, crime, divorce, immigration, population and race problems. This course, therefore, is a natural introduction to the Sociology Courses, which deal more directly with social theory.

Soc. s103. General Sociology. (1st term.) Five hours a week; three credits. Mr. Winston. 10 M. T. W. T. F. Pe. 108.

Required of sophomores in Business and Agricultural Administration and of juniors in Industrial Management. Elective for others.

The course deals first with the basic principles of sociology, then analyzes society and its influence on human behavior.

Soc. s301. Social Pathology. Five hours a week; three credits. Prerequisite: Soc. 103. Mr. Winston. 8 M. T. W. T. F. Pe. 108.

The course gives primary attention to the problems of adjustment resulting from the complexities of modern life. In the Summer Session, it is particularly adapted to the behavior problems of children which teachers face in their work.

Soc. s306. The Family Organization. Five hours a week; three credits. Prerequisite: Soc. 103 and three additional term credits in Sociology. Mr. Winston. 9 M. T. W. T. F. Pe. 108.

A study of family relationships, of the relationship between husband and wife, parents and children, with particular emphasis on the development of personality. The effect of present-day social changes upon the family and the changes in family life as a result will be studied. Discussion of various efforts to stabilize the family. The part habits play in successful and non-successful marriages will also be discussed.

SOILS

Soils s110. Soil Geology. Seven periods a week; four credits. Mr. Cobb. 11 M. T. W. T. F. Laboratory arranged. Pt. 16.

Lectures, laboratory and field work in geology, with special reference to the origin of soils.

Soils s265. Soil Fertility. Five periods a week; three credits. Mr. Cobb. 9 M. T. W. T. F. Pt. 16.

A course dealing with the chemical and biological properties of soils as related to soil fertility.

Soils s310. Fertilizers. Five periods a week; three credits. Mr. Cobb. 8 M. T. W. T. F. Pt. 16.

A study of the sources, characteristics and utilization of fertilizers.

Soils s324. Fertilizer Problems. Five periods a week; three credits. Mr. Cobb. 8 M. T. W. T. F. Pt. 16.

Designed especially for agricultural teachers and specialists. A course dealing with fertilizer problems which the agricultural teacher or specialist

may meet with in connection with his work. It includes a consideration of methods of carrying out fertilizer demonstrations, a study of the results of fertilizer experiments, the modification of ready mixed fertilizers, the proper use of the new concentrated fertilizers, etc. A trip is made to the Coastal Plain Test Farm for the purpose of studying the fertilizer experimental plots.

TEXTILES

Tex. s102. Yarn Manufacture I. Three credits. Mr. Hilton. By arrangement. Textile Building.

Mixing of cotton, Openers, Pickers, Cards, Description and setting of different parts. Calculations for production, speeds and drafts.

Tex. s103. Yarn Manufacture Laboratory I. One or two credits. Mr. Hilton. By arrangement. Textile Building.

Practical methods of mixing cotton, opening and feeding cotton to pickers, obtaining weights per yard. Grinding and setting cards.

Tex. s107. Power Weaving. Two credits. Mr. Nelson. By arrangement. Textile Building.

Construction of auxiliary motions on plain looms. Cams and their construction. Drop-box loom construction. Methods of pattern chain building. Construction and value of pattern multipliers. Timing of drop-box motion, and other studies.

Tex. s108. Power Weaving Laboratory. One or two credits. Mr. Hart. By arrangement. Textile Building.

Operation and fixing of plain, automatic and drop-box looms. Pattern chain building for drop-box looms.

Tex. s115. Textiles for Teachers. Five hours a week; three credits. Mr. Nelson. 8 M. T. W. T. F. Textile Building.

This course is designed to give a fundamental knowledge of fabrics. It will include a study of various fabrics and their selection and adaptability to different uses. Various methods of distinguishing fabrics made from different materials such as cotton and rayon, cotton and wool, wool and silk, and other combination of yarns will be given and analysis made of the fabrics. In addition, a general survey of the various processes through which cotton passes in its transition from the raw material to the finished product will be studied.

Tex. s201. Yarn Manufacture II. Three credits. Mr. Hilton. By arrangement. Textile Building.

Construction of draw frames; sliver lapper; ribbon lapper and comber. Description and setting of different parts; care of machines; fly frames; builder and differential motions; roll setting; calculations for draft, twist, lay, tension and production.

Tex. s202. Yarn Manufacture Laboratory II. One, two or three credits. Mr. Hilton. By arrangement. Textile Building.

Practical operation of draw frames; sliver lapper; ribbon lapper and comber. Setting of rolls. Operation of fly frames, changing of hank roving and the setting of speeder builder motions.

Tex. s205. **Fabric Design and Analysis I.** Three or six credits. Mr. Hart. By arrangement. Textile Building.

Construction of fancy weaves, such as broken twills, curved twills, entwining twills, granite weaves. Imitation leno; honeycomb weaves; fabrics backed with warp or filling; fabrics ornamented with extra warp or filling; combining weaves together to produce new patterns.

Analyzing samples of fancy fabrics for design, drawing in draft, reed, and chain plan. Calculating particulars to reproduce fabric from data obtained from sample.

Tex. s207. **Dobby Weaving.** Three credits. Mr. Nelson. By arrangement. Textile Building.

Methods of drawing in and starting up cotton and rayon warps. Setting of harness shafts. Selection of springs or spring jacks. Construction and methods of fixing single and double index dobbies. Methods of pattern-chain building.

Tex. s208 or s209. **Dobby Weaving Laboratory I or II.** One, two, three, or six credits. Mr. Hart. By arrangement. Textile Building.

Preparation of warps for weaving cotton and rayon fabrics on dobby looms; starting up warps in looms; fixing single and double index dobbies; pattern chain building; operation of dobby looms.

Tex. s404. **Textile Fabrics: Their Qualities and Uses.** Three credits. Mr. Nelson. By arrangement. Textile Building.

Analyses and illustrations of standard, fancy, and novelty fabrics. Determination of fabric content. Construction of fabrics. Determination of quality in fabrics. Common defects in fabrics, and their causes. Methods of testing fabrics for strength, elongation, and durability.

ZOOLOGY

Zool. s101. **General Zoology or Economic Zoology.** Six recitation periods; four hours laboratory; four credits. Mr. Mitchell.

General Zoology—An elementary study of vertebrate anatomy. This is equivalent to the first term course of the regular college year. A study is made of the systems of organs of a typical mammal, with their functions and their modifications in other vertebrates, coupled with the consideration of the fundamentals of the science of Zoology. This course is foundational to such fields as Animal Physiology, Psychology, Animal Husbandry and Poultry.

Economic Zoology—A survey of the Animal Kingdom, with special reference to the more important economic groups. This is equivalent to the second term course of the regular college year. A study is made of the fundamental differences between the various groups of animals, with special emphasis on the economic aspects of each group, coupled with such general considerations as distribution, relations to environment, evolution, etc. This is foundational to such fields as Entomology, Parasitology, General Agriculture, etc.

One or the other of these courses will be given, depending upon the demands or needs of the students.

Zool. s102. **Physiology.** Five times a week; three credits. Prerequisite: Zool. 101. Mr. Bostian.

A course devoted to the comparative physiology of vertebrate animals, with particular reference to mammals and man. Detailed studies are made of the various functions, with special emphasis on metabolism.

APPLICATION FOR ADMISSION

TO

STATE COLLEGE SUMMER SCHOOL

Name in full_____

Home Address: P. O._____, R. F. D._____

County _____, State_____

Courses desired_____

_____

Are you a high school graduate?_____; Have you attended any other college?_____

Name _____

In case of sickness notify_____

Do you expect to occupy a dormitory room?_____

Church preference _____

Date of application_____

(As soon as you decide to attend State College Summer School, please fill out above blank and mail to the Director.)

STATE COLLEGE RECORD

VOL. 32. MAY, 1933 (Supplement) No. 6

Summer School

JUNE 19—JULY 28, 1933

Announcement of Courses

NORTH CAROLINA STATE COLLEGE
OF
AGRICULTURE AND ENGINEERING
OF THE
UNIVERSITY OF NORTH CAROLINA

STATE COLLEGE STATION
RALEIGH

PUBLISHED MONTHLY BY THE NORTH CAROLINA STATE COLLEGE OF AGRICULTURE AND ENGINEERING

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SUMMER SESSION, 1933

The twentieth Summer Session of the North Carolina State College of Agriculture and Engineering, which begins Monday, June 19th, and closes Friday, July 28th, has broadened considerably its instruction, particularly by offering additional courses. In the courses given, the work will be directed primarily to the needs of teachers in secondary education. The usual technical courses will also be offered, as well as courses for teachers of Industrial Arts who hold a certificate of Grammar Grade C or higher.

In addition to the subject-matter courses open to all students who have graduated from high school and particularly suitable for those persons preparing to teach in the secondary schools, there will be courses in the methods of teaching the various high school subjects.

The State College Summer School is desirous of using its faculty and laboratories, which are particularly well prepared and equipped in the scientific and technical fields, to meet the rapidly developing needs of the State. The Summer School is, however, making ample provision for those persons who want training in the advanced academic subjects, and is providing the best of instruction in the professional studies.

AGRICULTURE

A six-weeks course in professional and technical subjects will be given for the teachers of agriculture and for students who wish to pursue their studies in technical agriculture. It is designed for both the teachers already in service, and for prospective teachers of agriculture in the vocational schools.

COTTON CLASSING

The courses in Cotton Classing are arranged to instruct the producer in grading staple, to induce him, in consequence, to try to grow cotton of better staple, and to aid him in selling his product to better advantage. They are open also to buyers of cotton. The courses are arranged for young and middle-aged men, and are not intended for boys, nor for men who lack earnestness of purpose. There are no entrance requirements for the Cotton Classing courses except that the applicant should have a good English education.

THE AMERICAN INSTITUTE OF COOPERATION

The American Institute of Cooperation will hold its 1933 meeting during the Summer School. This is a national organization devoted to the interest of farmers' movements and the fundamental principles of farm marketing. The convention part of the Institute will be held the last week of the Summer School, July 24-28. Appearing upon the program of this meeting will be many of America's foremost thinkers in fields of cooperative marketing and the economic aspects of the farm problem, bringing to their hearers the latest results of research on these problems.

There will be sectional meetings for the discussion of the various problems of cooperation as they apply to the marketing of different commodities.

In connection with the meeting of the Institute special three weeks' credit courses will be given in those subjects directly related to the interest of the Institute. These courses will begin on Monday, July 10, and run through the 28th. The fee for the three weeks' credit courses will be $15.00, with room and board extra.

SHORT COURSE FOR FARMERS AND FARM WOMEN

The annual farmers' and farm women's convention will be held this year in connection with the meeting of the American Institute of Cooperation. These metings will convene at the College on Monday, July 24 and run through the week. This is an opportunity for the farmers and farm women of the State to hear speakers of national and international reputation upon problems of vital concern to the farm and home.

HIGH SCHOOL PRINCIPALS AND SCIENCE TEACHERS

There will be offered for principals and teachers of high schools, both professional and subject-matter courses. Special courses in methods of teaching high school science, together with courses in the various physical sciences, will occupy a large place in the Summer School. This is made necessary by the demand throughout the State for professionally trained teachers of science in the secondary schools. *Teachers planning to take these courses are requested to bring their high school texts.*

INDUSTRIAL ARTS

During the Summer School emphasis will be given to the preparation of teachers of industrial arts for the various communities of North Carolina. The rapid growth of industrial education in our State is creating a demand for supervisors and teachers who are competent to develop it in the right direction. Courses will be given in shop practice, mechanical drawing, methods of teaching, subject-matter, and administration.

Supervisors and teachers are needed for the work in the junior and senior high schools, part-time and continuation schools, and evening schools. The need is for those who are familiar with both general and vocational education and are capable of placing the proper emphasis on the courses to be outlined for a particular locality.

Industrial arts education depends largely upon the soundness of the philosophy concerning the type of training which underlies the introduction of industrial studies. For this reason those professionally minded teachers with vision will welcome courses giving them a better basis for their work in the classroom.

Courses in Textiles designed for men who are employed in the manufacturing plants, as well as courses for teachers who are employed in the textile communities, will be given. These courses will be arranged on a unit basis in order to meet the needs of the various groups who may wish to come to the College for different periods.

VOCATIONAL GUIDANCE

Guidance is recognized as a part of the work of each teacher in the school. Pupils of all ages require assistance in their growth and progress through their school problems. Each stage of school development as elementary, junior high, senior high, and college requires special attention which the individual teacher may render. In addition to the work done in the classroom, there is that of the school counselor and director of the work whose duty it is to provide materials and programs of work, together with the care of such special cases as requires specific aid.

Vocational Guidance, Ed. 320, is a beginning course for advanced undergraduates and graduates, also for teachers in service who wish to help in guidance activities. Occupational Counseling, Ed. 412, is a graduate course for those who have had Ed. 320 and some experience in teaching, and those

who have had a wider experience in school and industry. Closely correlated with these courses are those in psychology, sociology, economics and testing.

INDUSTRIAL ARTS FOR ELEMENTARY TEACHERS

The purpose of the courses in Industrial Arts for the elementary school is to create interest in these problems using them to motivate the elementary school subjects and to prepare teachers and supervisors who will become leaders in introducing this work into their school systems. Credit for these courses may be used either in raising or renewing certificates. The courses will be open only to those who hold a Primary or Grammar Grade C Certificate or one of higher grade.

Teachers desiring to raise or renew their certificates will take the first two of the courses in the list following, and one course selected from the remainder of the list.

Ed. s353. The Theory of Industrial Arts in the Elementary School. Five hours a week; three credits.
***Ed. s354. Practical Arts Problems.** Ten hours a week; three credits.
Tex. s115. Courses for Teachers. Four hours a week; two credits.
Ed. s201a. Educational Psychology. Five hours a week; three credits.
Ed. s327. Standard Testing and Measuring. Five hours a week; three credits.
Ed. s320. Vocational Guidance. Five hours a week; three credits.
***Ed. s355. Art Studies in the Elementary School.** Ten hours a week; 1½ or 3 credits.

NOTE.—The above courses are described elsewhere in this bulletin.

PHYSICAL EDUCATION AND COACHING

The Summer School will offer opportunity for coaches and teachers of physical training to take specialized courses in the Department of Physical Education. The courses in athletic coaching and physical training are arranged especially for instructors already engaged in teaching during the regular school year and for others who wish to supplement the preparation they may have received in college. The courses take up the more important problems of coaching, and are designed for the purpose of fitting men more completely to take charge of athletics and physical training in schools and colleges throughout the country, and for fitting women to coach basketball, and direct physical training programs.

Leaders in education now recognize the fundamental need of athletics as an important part of any broad educational program. The demand for competent teachers, supervisors, and directors far exceeds the supply. This is especially true in case of men qualified both in coaching and in conducting classes in physical training. Our schools are seeking men who are college trained to take charge of their athletics; men who are versed in all phases of athletic coaching and administration. Approximately thirty-six states in the Union now have adopted legislation making physical education a prescribed part of the elementary and secondary school program.

MUSIC AND ASSEMBLIES

The success of the musical organizations of the Summer School under the direction of Mrs. Lillian Parker Wallace has elicited favorable comment from friends throughout the city. These are voluntary organizations and Mrs.

*A fee of $1.00 will be charged those taking Ed. s354 and Ed. s355 to pay for the materials used.

Wallace kindly gives her services to these groups without charge. Students interested in music should by all means bring their musical instruments with them.

Only one assembly period per week will be provided. Interesting programs will be arranged for each of these. All students and faculty members are expected to attend these assemblies.

RECREATION

There will be supervised recreation, consisting of tennis tournaments, baseball, volleyball, basketball and handball. Instruction in swimming will be provided for both men and women. The new swimming pool, lockers and showers, and other gymnasium facilities will be available to all students.

A popular occasion during the 1932 Summer School was the ALL COLLEGE PARTY. These parties give an opportunity for the students and faculty to know each other better by playing and dancing together. More of these will be provided in 1933.

GRADUATE STUDIES

Practically all of the departments of instruction at the College that are offering undergraduate work during the Summer School will also offer graduate work. Persons who have completed their undergraduate work and desire to continue toward an advanced degree may do one-half term's work by pursuing graduate studies during the six-weeks Summer School.

Six summer schools of six weeks in residence at the College are reckoned sufficient to fulfill the residence requirement for the Master's degree. By specific approval of the Committee on Graduate Instruction, one summer period may be spent away from the College if devoted to the preparation of the thesis required for graduation.

COLLEGE CREDIT

Beginning with 1924-1925, the regular session of State College was divided into three terms; consequently "credit," as used throughout this bulletin, refers to term credit, or twelve weeks work, unless otherwise designated. Therefore, in order for the college-credit courses to count for a full term's work, they will be given, if for five credits, ten periods a week; if for three credits, five periods a week. Since, however, no student will be allowed to take more than eighteen hours of work per week without special permission, this restriction will prevent a student's taking more than one ten-period course.

Thirty days of work during the six weeks will be accepted as meeting Summer School requirements if all the demands of the course are met. This includes one day for registration and one day for examination.

The courses for college credit are open to graduates of standard high schools, and to others of equal qualifications. These courses give college students the opportunity to remove conditions, so that they may enter their classes in the fall in full standing. They will also make it possible to secure advanced credit. The college-credit courses are also open to teachers who hold standard State certificates.

All professional courses offered will have value both for teachers' certificates and for college credit. The subject-matter courses may be counted by teachers for academic credit towards securing or raising their certificates.

PROVISION FOR BOTH MEN AND WOMEN

All courses are open to both men and women. Special accommodations in the dormitories are provided for the women, and special attention will be given to their comfort and welfare.

ACCOMMODATIONS FOR WOMEN

The fifth dormitory will be set apart for women in attendance upon the Summer School and will be under the supervision of Mrs. Mary Smithwick, who has served so efficiently for several summers. The sixth dormitory will be reserved for married couples wishing to attend Summer School.

The variety of courses offered during the State College Summer School should appeal not only to those women in the teaching profession, but to those who are interested in taking advantage of these courses in preparation for other vocations and leading toward a college degree. Young women living in Raleigh who are working for a college degree should take advantage of this opportunity.

EDUCATIONAL FORUM

An open forum for discussion of timely subjects in the several larger fields of study in the college will be conducted for the benefit of Summer School students. These meetings will consist of an opening lecture by a recognized leader in his field, followed by a period of round table conference. These meetings will be as frequent as the attendance and interest will warrant.

PERSONAL PROBLEMS CONFERENCE

In view of the unusually difficult conditions under which teachers are working, the Summer School is providing for a weekly conference period of faculty and students for the consideration of urgent problems in fields in which students may not be able to get sufficient information and help in regular courses. The conference plan will have the advantage of having a number of faculty members in attendance to bring in their individual experience and points of view bearing on the problem under consideration. This plan aims to afford students the opportunity to have light thrown upon just as many of their general and individual problems as possible to provide.

OPPORTUNITY FOR INTERVIEWS

Members of the faculty will maintain office hours for consultation with students on problems related to their respective fields of work.

In addition to regular personal and professional assistance the State College faculty is always anxious to give teachers, it should be of tremendous value to teachers to attend Summer School in Raleigh where they are in easy access to the various State Departments. This is especially true in connection with personal interviews teachers may arrange with heads of divisions in the State Department of Education. The Director's office will be glad to aid in arranging for these interviews.

SOCIAL FEATURES

A reception for students and faculty, followed by other social and recreational events such as week-end picnics and excursions, serve to foster a congenial spirit in the student body as well as to keep students physically and mentally fit for efficient study.

FEES AND EXPENSES FOR SIX-WEEKS STUDENTS

All fees and other charges are payable in advance or upon registration, and all checks should be payable to N. C. State College.

Registration	$12.50
*Tuition (except for teachers)	10.00
Classroom and Laboratory Maintenance Fee	5.00
Room Rent, each person (two or more in room)	7.50
	$35.00
Fee for three weeks' courses	$15.00

*FREE TUITION FOR TEACHERS

Exemption from the payment of the $10.00 tuition fee is provided by legislative enactment for teachers now in service in the schools of North Carolina, and for residents of the State who are preparing to teach during the school year 1933-34.

Teachers now in service and students preparing to teach, who are residents of the State, will be required to sign the usual teacher's agreement to teach in North Carolina for at least six months, or to pay the tuition within one year from date of registration in case they do not teach.

All students occupying a room alone will be charged $10.00.

Students taking in excess of the normal load of 3 courses will be charged a fee of $5.00 for each additional course. Double courses will be counted as two courses.

There will be a key deposit of twenty-five cents, which amount will be refunded when the key is returned.

BOARD AND LODGING

The college dining room will not be kept open during Summer School. The cafeteria, which is in the same building with the dining room, will be run for the benefit of the Summer School students and faculty.

A great many members of the faculty and regular college students eat in the cafeteria and find it very satisfactory, and about as cheap as the dining room, with the addition of greater variety from which to select, and longer periods in which to eat. The cafeteria charges are reasonable. Students will be assigned to rooms upon their arrival at the College.

In case it is desired to change the room assignments, permission to do so must first be obtained from the Superintendent of Buildings. In no case may a room be taken until it has been regularly assigned.

WHAT STUDENTS NEED FOR THEIR ROOMS

The College rooms are supplied with necessary furniture. Each student, however, should bring towels, sheets, one pillow and two pillow cases, and two bedspreads for a single bed.

REGISTRATION

All registrations will be conducted in Frank Thompson Gymnasium beginning at 9 a m., on June 19th. Students are expected to report in person on Monday, June 19th, so that they may begin class work on the morning of Tuesday, June 20th, at 8 o'clock. Deans and Directors of Instruction will be present to advise students relative to courses.

DIPLOMAS

Students expecting to receive a degree at the end of the Summer School should come to the Office of Registration early in the session and check up on all credits; also check their names as to correctness of spelling, etc., in order that they may appear properly upon the diploma.

HOURS OF WORK

It is important to notice that teachers are required to take at least fifteen hours weekly in order to receive credit for one summer session. Additional credits may be taken by students if they have points to justify, and by teachers on approval of the Director. However, a fee of $5.00 will be charged for the extra course, and in no case will a student be allowed more than twelve credits per week. *Each student will be allowed to audit a class five times, if agreeable to instructor.*

The Summer School authorities reserve the right to cancel any course for which the registration is less than eight.

SCHOOL FOR JANITORS AND FIREMEN

For the past few summers the Mechanical Engineering Department of North Carolina State College, as a feature of the Summer School, has conducted a short course for six days for white janitors and firemen, teaching the fundamental principles of combustion, how to fire economically, and general instructions about heating systems and operation of the plant. The mornings are given to lectures and talks by members of the college faculty and representatives from other state departments, and the afternoons are given over to the practical problems and inspection trips to different schools. The total cost which includes cost of registration and room rent will not exceed $3.00. Board is not furnished, but can be secured from the College Cafeteria. The 1933 school will be held the week of July 3-8 and applications for admission should be sent to Professor L. L. Vaughan, North Carolina State College, Raleigh, North Carolina.

THE ATTRACTIONS OF RALEIGH

Being the capital of one of the original thirteen states, Raleigh is unusually rich in historical collections, fine public buildings, and interesting places and memorials. It is interesting, also, for its churches, its schools, its hotels, and its office buildings, and its growing commercial and industrial activities. Opportunities will be given the students to visit the places of interest.

The various churches welcome all Summer School students to Sunday school and church services, and their pastors have taken a very friendly interest in the morning services at the College auditorium. Raleigh will be found in all respects a delightful place of residence.

THE SOCIAL CENTER

The Y. M. C. A. building will be the social center of the school. This building contains a reading room, an auditorium, several reception rooms, telephone booths, and other conveniences for the promotion of the social life of the students.

THE D. H. HILL LIBRARY

The D. H. Hill Library, one of the most beautiful libraries in the South, will be open for the use of Summer School students. Its spacious reading and periodical rooms afford an opportunity for research and study under the most pleasing conditions. The consolidation of the various departmental libraries into the central library, have greatly increased the library facilities. The library maintains a competent staff adequate to render every possible library service.

The Olivia Raney Library and the State Library will also be open to Summer School students for reference work.

FRANK THOMPSON GYMNASIUM

The Frank Thompson Gymnasium is without doubt the finest and best equipped gymnasium in the South. The main floor is 130 by 110 feet, with an inter-collegiate basketball court of maximum size, and seating capacity for 2,500 spectators without using the gallery. Two maximum sized cross courts make it possible to run off class and tournament games. The auxiliary gymnasium or exercise room is 110 by 40 feet. Both of these rooms are equipped with full gymnasium apparatus and handball courts. The basement is fitted up with 1,000 private steel combination lockers. Team training rooms, equipped with private showers and lockers, a towel service room, an equipment room, and a wrestling and boxing room compose one-half of the basement. The other half is given over to the armory.

The swimming pool is located in an annex amply lighted both by windows and skylights, and finished with white tile. The pool is 75 by 30 feet, with room sufficient to accommodate several hundred spectators.

MEETING OF TEACHERS OF AGRICULTURE AND YOUNG TAR HEEL FARMERS

The annual conference of teachers of vocational agriculture and the annual Young Tar Heel Farmer Meeting will be held at N. C. State College the week of June 19. The conference of teachers of vocational agriculture will be held June 19, 20, and 21 while the Young Tar Heel Farmer Meeting will be held June 22, 23, and 24, 1933.

4-H CLUB SHORT COURSE

The annual boys' and girls' 4-H short course will be held at State College the week of July 31 to August 5.

COURSES TO BE OFFERED IN THE SUMMER SCHOOL

ABBREVIATIONS FOR BUILDINGS

C.—Ceramic
G.—Gymnasium
H.—Holladay
P.—Page
P. & E.—Physics and Electrical Engineering Building
Pe.—Peele Hall
Pk.—Polk Hall
Pr.—Primrose
Pt.—Patterson
R.—Ricks
T.—Textile
Pl.—Pullen Hall
W.—Winston
Z.—Zoology Building

ANIMAL HUSBANDRY AND DAIRYING

A. H. s217. Ice Cream Making. Four credits; lectures and laboratories. Prerequisite: A. H. 103. Mr. Ruffner. By arrangement. Pk. 110.

Standardizing of mixing and freezing of ice cream, sherbets, and other frozen products, and the physical principles involved; types of freezers, flavoring materials, fillers and binders; ice cream standards; the theory and practice of artificial refrigeration and its use in the ice cream plant.

A. H. s304. Herd Improvement. Five times a week; three credits. Prerequisite: A. H. 101, 102, 103. Mr. Ruffner. By arrangement. Pk. 110.

This course is designed for training students as supervisors of cow-testing associations in North Carolina. Rules and requirements for Advanced Registry Testing are studied in detail. Lectures are supplemented with laboratory work, and the student is required to do practical work in keeping feed costs, milk weights, butterfat tests necessary in the efficient management of dairy associations.

BOTANY

Botany s101. General Botany. Nature of the Higher (Crop) Plants. Two lectures; two recitations; eight hours laboratory; four credits. Equivalent to Freshman and Sophomore courses given the first quarter of the regular college year. Mr. Shunk, Mr. Whitford. 8 M. T. W. T.; 2-4 M. T. W. T. Pt. 47.

This course is offered to meet the needs of the following groups of students:

(1) Teachers of Biology who desire to enhance their knowledge of the higher plants, especially the crop plants.

(2) Agricultural workers who desire a thorough review of the fundamental structure and functions of the crop plants.

(3) College students who, having failed this course in past years, desire to change their record in regard to it.

In the course the fundamental structural and functional facts concerning the crop plant are taken up. Beginning with the flower, the work proceeds to the problems of fruits, seeds and germination of seeds. Then some fundamental biology is given relating to cells and tissues. Following this, the structural and functional data concerning roots, stems, buds, and leaves are presented. Numerous excellent microscopic slides are used to present the minute structural aspects, while the functional aspects are given with the aid of a number of striking demonstration experiments. Fresh crop plant material is used throughout the course for illustrative purposes. The course closes with a thorough review and summary of the whole field studied.

Botany s202. General Bacteriology. Four recitations; eight hours laboratory; four credits. Prerequisite: Bot. 102 or equivalent. Mr. Shunk. 11 M. T. W. T.; 2-4 M. T. W. T. Pt. 47.

This course, which is basic for all other work in the subject, gives an introduction to the principles of bacteriology. All of the various fundamental phases of bacteriology are taken up. Through laboratory work the student learns modern cultural methods of handling and studying bacteria. Toward the latter part of the term opportunity will be offered students to do special laboratory work on water, milk, and disease-producing bacteria, if they so desire.

Botany s203. Systematic Botany. Two lectures; eight or sixteen hours of laboratory; five credits. Equivalent to Junior and Senior courses given in third quarter of the regular college year. Prerequisite: Elementary Botany. Mr. Shunk, Mr. Whitford. 9 T. Th.; 2-5 M. T. W. T. F. Pt. 47.

This course is presented for all students who desire a more intimate outdoor acquaintance with plants, both cultivated and wild. Teachers of biology, agricultural students, and all others interested in natural history will find this course especially desirable.

The basis of the course consists of practice in identification of plants with the aid of the plant manual. Material collected on the field excursions is brought into the laboratory and studied with the aid of binocular microscopes. In the lectures, the fundamental characters of the natural plant families are pointed out and the voluntary relationships of these families are discussed. On the frequent field excursions the class will visit the floristically rich areas about Raleigh. On these excursions a few lectures will be given, dealing with the relation of plants to their environment. By the time the course closes, the student should personally be acquainted with the commoner trees, shrubs, wild flowers, and weeds of the State.

Botany s400. This graduate course will be arranged to suit the students and the Department.

CHEMISTRY

Chem. s101. General Chemistry. Five hours in classroom and five hours in laboratory each week. Four credits. Equivalent to first term General Chemistry as given in the regular college year. Mr. Wilson, Mr. Satterfield. 8 M. T. W. T. F.; 1-5 T. W. 114.

Composition and properties of air and water. First principles of Chemistry, such as atomic theory, laws of chemical combination, valence, chemical formulas and equations, oxidation, reduction, behavior of gases and solutions. Study of a few typical elements, such as oxygen, hydrogen, carbon and nitrogen, together with their simpler compounds.

Chem. s103. General Chemistry. Five hours in classroom and five hours in laboratory each week. Four credits. Equivalent to second term General Chemistry as given in the regular college year. Mr. Wilson, Mr. Satterfield. 10 M. T. W. T. F.; 1-5 Th. W. 102.

Particular attention given to chlorine, sodium, nitrogen, sulfur, flourine, bromine, and their compounds. Study of such common substances as salt, lye, soda, carbon disulfide, prussic acid, petroleum, coal tar, acetylene; ammonia and its more interesting uses such as in ice machines; sulfur dioxide in household refrigerators and as a bleaching and germicidal agent; compounds of nitrogen in warfare and agriculture. Introduction to acids, bases, salts, ionization, hydrolysis, equilibrium, the periodic law and the new theories of the structure of the atom.

Chem. s105. General Chemistry. Five hours in classroom and five hours in laboratory each week. Four credits. Equivalent to third term General Chemistry as given in the regular college year. Mr. Wilson, Mr. Satterfield. 11 M. T. W. T. F. Laboratory 1-5 T. W. 114.

Chemistry of clays, ceramics, glass, cement, soils, fertilizers, insecticides, lime, hard water, alloys, paints, storage batteries, photography, flames and explosions. Compounds and properties of phosphorous, arsenic, bismuth, silicon, boron, potassium, calcium, magnesium, zinc, aluminum, iron, tin, lead, nickel, copper, mercury, silver, gold, platinum and other less common elements. Thermochemistry, colloids and radioactivity.

Chem. s111. Qualitative Analysis. Two hours lecture with four laboratory periods of three hours each, per week. Equivalent to one term of college work. Four hours credit. Prerequisite: General Chemistry. Mr. Wilson. 10 T. Th.; Laboratory to be arranged. W. 102.

A systematic study and separation of the metallic ions and non-metallic ions into their respective groups, their identification and the chemical reactions involved. The last two weeks will be given over to the complete analysis of mixed salts, compounds, and alloys.

Chem. s112. Quantitative Analysis. Two lectures and twelve hours laboratory. Equivalent to one term of college work. Four hours credit. Prerequisite: Qualitative Analysis. Mr. Wilson. Arrange. W. 102.

This work will deal with the theory and practice of making up and standardizing acids, bases, di-chromate and permanganate solutions, also the determination of the strength of unknown acids and bases, the analysis for the per cent purity of iron ores, oxalates, sulphates, magnesium phosphate rock, etc.

Chem. s141. Practical Organic and Biological Chemistry. Five hours a week; three credits. Prerequisite: Chem. 101, 103. Mr. Satterfield. To be arranged. W. 111.

A systematic study of hydrocarbons, alcohols, aldehydes, ketones, acids, ethers, esters, amino acids, and benzine derivatives, with entire emphasis on the substances in these groups which are related to plant and animal life processes. Special attention to carbohydrates, fats, proteins, and related compounds. Brief treatment of vitamins, alkaloids, plant colors, flavors, and other miscellaneous substances.

Chem. s240. Food Products and Adulterants. Five times a week; three credits. Prerequisite: Training satisfactory to instructor. Mr. Satterfield. 10 M. T. W. T. F. W. 115.

A study of the production and manufacture of food products. Food principles, cereals, starches, sugars, fats, milk and milk products, the packing house, food preservation, beverages, spices and condiments will be treated. Food legislation.

Chem. s341. Chemistry of Vitamins. Five hours a week; three credits. Prerequisite: Training satisfactory to the instructor. Mr. Satterfield. 12 M. T. W. T. F. W. 115.

This course is devised to give practical knowledge of the application of the vitamin hypothesis to human nutrition. The history, nomenclature, properties, distribution, effects of deficiencies, and methods of determining vitamin values will be discussed.

Chem. s344. Food, Nutrition and Diet. Five hours a week, three credits. Prerequisite: Training satisfactory to instructor. Mr. Satterfield. By arrangement. W. 115.

The influence of vitamins, minerals, proteins, amino acids, carbohydrates, fat, fiber, flavor, color, enzymes, preservatives and stimulants on the body. Chemical and physical nature of carbohydrates, fats and proteins. Digestion and metabolism. Study of the proper diet. Flesh-forming and flesh-producing diets. Diet in disease. Sour milk therapy.

While human feeding is emphasized in this course, principles here discussed are applicable to the feeding of animals as well.

Other courses in Chemistry offered during the regular school year may be taken by arrangement.

ECONOMICS

Econ. s102. Introduction to Economics. Five hours a week; three credits. Mr. Brown. 8 M. T. W. T. F. Pe. 101.

This course is the regular college one-term course required of all students in Engineering and is designed for those students who do not feel able to devote more than one term to the study of Economics, and also for teachers preparing to teach Economics in High Schools.

This is an elementary course in Economics. It treats of the business aspects and economic organization of society. It includes a study of the great fundamental economic laws which apply to all professions and occupations; a study of the production, distribution and value of economic goods, and a study of the institutions, agencies, and ideals which dominate, operate and control the manner, means, and methods of making a living.

Econ. s103. General Economics. Five hours a week; three credits. Mr. Brown. 11 M. T. W. T. F. Pe. 101.

This is the first term of the regular college course in General Economics.

An introduction to the general field of Economics. A study of economic institutions and the general principles governing the production and distribution of wealth under the existing economic organization.

Sections for F. W. S.

Econ. s112. Accounting for Engineers. Five hours a week; three credits. Mr. Goehring. 9 M. T. W. T. F. Pe. 109.

Required of students in the School of Engineering. Not open to students in Business Administration.

A survey of accounting and financial statements and records; their construction, their use and interpretation.

Econ. s201. Accounting I. Five hours a week; three credits. Mr. Leager. 9 M. T. W. T. F. Pe. 3.

Required of all sophomores in Business Administration and Industrial Management.

A course in the theory and practice of accounting, covering the essential principles of accounting as applied to the several types of business organizations, giving interpretations of the structure, form, and uses of formal business statements such as Balance Sheets, Statements of Profit and Loss, etc.

Sections for F. W. S.

Econ. s210. Business Organization. Five hours a week; three credits. Prerequisites: Econ. 102 or 103. Mr. Leager. 8 M. T. W. T. F. Pe. 3.

Forms of business enterprises, single enterprises, partnerships, joint-stock company, corporation, and principles of business management.

Econ. s211. Business Law. Five hours a week; three credits. Prerequisite: Econ. 102 or 103. Mr. Goehring. 10 M. T. W. T. F. Pe. 109.

Required of seniors in Business Administration, and in Ceramic, Chemical, Civil, Architectural, Electrical, and Mechanical Engineering, and teachers of commercial subjects. Elective for other students.

A general survey of the sources of law, fields of law, contracts, agency, sales, law of partnerships and corporation, negotiable instruments, bailments and carriers, personal property, suretyship and guaranty, bankruptcy, crimes in business.

Econ. s212. Statistical Method. Five hours a week; three credits. Elective. Prerequisite: Economics 102. Mr. Leager. 10 M. T. W. T F. Pe. 3.

A study of the elements of statistical methods, collection and analysis of statistical data. This course stresses the application of statistical methods to educational data—graphical presentation, and analysis of teachers' problems.

Econ. s214. Forecasting Business Trends. Five hours a week; three credits. Mr. Moen. 9 M. T. W. T. F. Pe. 108.

A review of the history, and an analytical study of the outstanding business forecasting procedures and practices.

Econ. s217. Advertising. Five hours a week; three credits. Mr. Moen. 7 M. T. W. T. F. Pe. 108.

Principles and practices of advertising and its relation to the distribution and sales program.

Econ. s221a. Money. Five hours a week; three credits. Mr. Moen. By arrangement. Pe. 108.

History and theory of money and monetary systems.

Econ. s330. Principles of Insurance. Five hours a week; three credits. Prerequisite: Econ. 103 or equivalent. Mr. Leager. 11 M. T. W. T. F. Pe. 3.

A general course dealing with the various fields of insurance—life, fire, health, accident, credit, automobile, employees liability and workman's compensation.

Econ. s325. Stock Market Operations. Five hours a week; three credits. Mr. Moen. 8 M. T. W. T. F. Pe. 108.

A description and analysis of the principles and practices of the organized exchanges. Investment securities.

Agr. Econ. s265. Farm Marketing. Five hours a week; three credits. Prerequisite: Economics 102. Mr. Knapp. 9 M. T. W. T. F. R. 208.

A study of the economic principles underlying successful marketing of farm products, market organization and control, price-making forces, and critical examination of the present system of marketing farm products.

Agr. Econ. s267. Business Management of Cooperative Associations. Ten hours a week for three weeks; 3 credits. Prerequisite: Econ. 102 and Agr. Econ. 265 or the equivalent. To be arranged. Ricks Hall.

This course will cover the work of a cooperative association manager with regard to problems of organization, finance, accounting, selling, etc.

Agr. Econ. s269. Farm Accounting. Five hours a week; three credits. Mr. Knapp. 11 M. T. W. T. F. R. 208.

This course deals with the practical aspects of farm accounting, such as preparation of inventories of farm property, simple financial statements, method of keeping farm records, analysis of farm records, and the interpretation of results obtained from farm business transactions. Attention will also be given to methods of obtaining information on the business aspects of farming.

Agr. Econ. s270. Organization Arrangements of Successful Cooperative Associations. Ten hours a week for three weeks; three credits. Prerequisite: Econ. 102 and Agr. Econ. 265 or its equivalent. To be arranged. Ricks Hall.

Outstanding successful cooperative organizations will be carefully analyzed.

Agr. Econ. s364. Current Problems in Agricultural Cooperation. Ten hours a week for three weeks; three credits. Prerequisite: Econ. 103, Agr. Econ. 260, Agr. Econ. 265 and three additional credits in Economics. To be arranged. Ricks Hall.

This course will consider production control problems, use of subsidiary organizations, contracts and legal problems, membership relations, etc.

Agr. Econ. s365. National Economic Policies Affecting Agriculture. Ten hours a week for three weeks; three credits. Prerequisite: Econ. 103, Agr. Econ. 260, Agr. Econ. 265 and three additional credits in Economics. To be arranged. Ricks Hall.

This course will center its discussion on the present federal program of Agricultural Relief. Analysis will be made of different farm relief proposals for marketing and credit. Attention will be given to the ways in which vocational teachers, county agents, and others may correlate their efforts with the federal program.

EDUCATION

Courses for Undergraduates

Ed. s203a. Educational Psychology. Five hours a week; three credits. Required of students in Education; elective for others. Mr. Ingebritsen. 8 M. T. W. T. F. H. 3.

Original nature and environment are analyzed in this course as to their function in the educational processes. The elementary principles of psychology are illustrated and studied as they relate to the learning process.

Ed. s203b. Educational Psychology. Five hours a week; three credits. Required of students in Education; elective for others. Mr. Ingebritsen. 10 M. T. W. T. F. H. 3.

This part of educational psychology is concerned with the physical and mental development of high school boys and girls. Social development; character development; emotional development and control; religious and moral development; and, mental hygiene are topics given special consideration.

Note to Teachers of Industrial Arts:

Especially for industrial arts teachers, courses will be offered in woodworking, metal work, electrical work, auto-mechanics and mechanical drawing. The instructors will be men of wide experience helpful to teachers of general shop and unit courses.

Ed. s240. Woodworking for Teachers. Ten hours a week; three credits. Mr. Rowland. 2-4. M. T. W. T. F. Woodshop.

Benchwork, machine work, construction and finish of projects for junior and senior high school problems in selecting and installation of equipment.

Ed. s244. Metal Work for Teachers. Ten hours a week; three credits. Mr. Rowland. 8-10 M. T. W. T. F.

Machine shop, bench and machine work in forming, bending, cutting, and machining projects for junior and senior high school shops.

Ed. s245. Practical Electricity for High School Teachers. Ten hours a week; three credits. Mr. Keever. 10-12 M. T. W. T. F. Electric Shop.

Lectures and laboratory work in fundamentals of electricity as applied to secondary school industrial arts programs.

Ed. s249. Auto Mechanics for Teachers. Ten hours a week; three credits. Mr. Bridges. By arrangement.

Lectures and laboratory practices in phases of auto-mechanics suited to the secondary school.

Ed. s250. Mechanical Drawing for Teachers. Ten hours a week; three credits. Mr. Foster. By arrangement. P. 6.

Lectures and drawing room practice involving problems of junior and senior high school mechanical drawing. Lettering, instrument practice, projections, intersections, developments, tracing, and blue-printing.

Ed. s303. Extra-Curricular Activities in the Secondary School. Five hours a week; three credits. Prerequisite: Junior standing or teaching experience. Mr. Showalter. 10 M. T. W. T. F. Pe. 208.

The home room; pupil participation in government, the assembly; clubs; publications; recreational activities; athletics; honor societies; social organizations; financial support.

Ed. s305. Methods of Study. Five hours a week; three credits. Mr. Cook. Prerequisite: Twelve credits in Education. 11 M. T. W. T. F. Pe. 201. (Not given in 1933.)

Ed. s320. Vocational Guidance. Five hours a week; three credits. Mr. Boshart. Prerequisite: Twelve credits in Education. 9 M. T. W. T. F. H. 16.

Treats of the problems of directing pupils in the study of occupations for the purpose of selecting satisfactory life work. It includes studies of the history of occupational guidance and personnel administration, principles and practices in guidance and employment, compulsory school laws, child labor legislation, and forms and records essential for school use.

Ed. s321. Vocational Education. Five hours a week; three credits. Mr. Boshart. Prerequisite: Twelve credits in Education. 12 M. T. W. T. F. H. 16.

This course is organized especially for administrators, supervisors, principals, and teachers who have not had opportunity of working out the relationships governing vocational and general education. It will treat of the needs and place of vocational education in the public school system; practices in organization of vocational education and vocational guidance in trades and industries, home economics, and agriculture, including continuation schools, part-time and evening classes; and the problems related to administration of the Smith-Hughes Act.

Ed. s323. Study of Occupations. Five hours a week; three credits. Mr. Boshart. 10 M. T. W. T. F. H. 16.

Given especially for principals and school counselors who are aiding pupils in the selection of a life work, this course will be a study of the essential elements found in various occupations. Interviews with men and women in different lines of endeavor and visits to plants and offices will form a goodly part of the work which will be written up in form to present to students of high school or college grade. Readings, reports, discussions, and lectures by class members will include the following: importance in society, the kinds of work involved, advantages and disadvantages, what preparation is necessary, individual qualifications, together with matters of income and general environment.

Ed. s327. Standard Testing and Measuring. Five hours a week; three credits. Prerequisite: Twelve credits in Education or Senior Standing. Mr. Mayer. 8 M. T. W. T. F. Pu. 7.

This course will give the teacher an insight into the more common achievement, diagnostic, and mentality tests, and their use and interpretation from the standpoint of the teacher, supervisor, and administrator.

Ed. s330. Visual Instruction. Five hours a week; three credits. Prerequisites: Twelve credits in Education. Mr. Armstrong. 9 M. T. W. T. F. Pe. 201.

An advanced course in the psychology, methods, and technique of visual instruction; its place and limits, evaluation and expense of various aids, aids available. Practice in the making and use of practical visual aids.

Ed. s331. Visual Aids in Social Sciences. Five hours a week; three credits. Prerequisite: Ed. 208 or Ed. 330 and nine other credits in Education. Mr. Armstrong. 8 M. T. W. T. F. Pe. 201.

A detailed study of visual materials, devices, and procedures applicable to teaching the social sciences, including geography. Emphasis will be given to motivation, facilitating the learning process, and fixation. Various devices will be used by the class.

Ed. s334. Elementary School Administration and Supervision. Five hours a week. Three credits. Mr. Highsmith. 12 M. T. W. T. F. Pe. 206.

The purpose of this course is to study the organization and supervision of the elementary schools to the end that more effective teaching may be secured.

Some of the topics considered are: Objectives in organization and supervision; administrative and supervisory standards, and ideals, methods and technique; supervision of instruction in elementary school subjects—reading, arithmetic, language, spelling, writing, social studies, physical education and health, music and art.

Ed. s335. Public School Administration. Five hours a week; three credits. This course is intended primarily for superintendents and principals. Prerequisite: Twelve credits in Education. Mr. Highsmith. 9 M. T. W. T. F. Pe. 208.

The following problems will receive consideration:

The powers and duties of the board of education; the powers and duties of the superintendent; the county-wide plan; consolidation of schools; transportation of pupils; school buildings and equipment; operation and maintenance of plant; janitor service; selection, purchase and distribution of

supplies; school reports; problems pertaining to the teacher, pupil and home; educational problems of a county school system. Textbooks, lectures, readings and reports.

Ed. s336. Problems in Secondary Education. Five hours a week; three credits. Prerequisite: Twelve credits in Education. Mr. Highsmith. 11 M. T. W. T. F. Pe. 206.

The purpose of this course is to give as practical assistance as possible to those men and women who wish to become or are now serving as high school principals in North Carolina. The following problems will be discussed:

Aims of secondary education; the curriculum (with special reference to the North Carolina course of study standards for high schools; classification of pupils; control of pupils; attendance; guidance of pupils; classroom standards; tests and examinations; marking system; directed study; class schedule making; duties of principals; supervision of instruction; selection of teachers; teaching load; salaries; textbooks, lectures, readings and reports.

Ed. s337. The Teaching of Geography. Five hours a week; three credits. Required for a certificate in science. Elective for teachers in the elementary and secondary school. Prerequisite: junior standing or teaching experience. Mr. Showalter. 9 M. T. W. T. F. Pe. 208.

Trends in geography teaching; nature and use of curriculum materials; practices in teaching geography; the place of geography in general education.

Ed. s339. The Teaching of Science in the Secondary School. Five hours a week; three credits. Required for a certificate in science. Prerequisite: junior standing or teaching experience. Mr. Showalter. 8 M. T. W. T. F. Pe. 208.

Determining influences in the development of science teaching; nature and use of curriculum materials; practices in teaching science; educational values and objectives; a program for teaching science.

Ed. s341. The Teaching of High School Mathematics. Ten hours a week; five credits. Prerequisite: Ed. 101, 203, 212, 213 and 20 credits in Mathematics. Mr. Mumford. 11-1 M. T. W. T. F. P. 101B.

A comprehensive view of the materials of High School Mathematics will be accompanied by a discussion of the selection and use of textbooks and supplementary helps. Practice will be given in the construction and use of written examinations, and the comparative merits of standard tests will be considered. Attention will be given to adapting both the content and the methods of procedure to the needs of various groups.

Ed. s353. Theory of Industrial Arts in the Elementary School. Five hours a week; three credits. Prerequisite: Twelve credits in Education. Mr. Boshart. 8 M. T. W. T. F. H. 16.

A study of the value and place of Industrial Arts in the elementary school. The correlation of Industrial Arts with other school subjects; the methods of teaching and supervision, and the study of industries, with the view of selecting suitable projects for classroom use. Primarily for teachers and supervisors of the elementary schools.

Ed. s354. Practical Arts Problems. Ten hours a week; three credits. Prerequisite: Twelve credits in Education. Miss Bell. 9-11 M. T. W. T. F. or 11-1 M. T. W. T. F. H. 15.

Treats of the selection and organization of suitable projects in Industrial Arts and the working out in detail of such as will meet the needs of the

class. The meaning of Industrial Arts and the methods of making it a part of the regular work of the school will be discussed. For teachers in the elementary schools who have had teaching experience and who have not had special work in Industrial Arts. A small fee for supplies.

Ed. s355. Art Studies in the Elementary School. Five or ten hours a week; one and one-half or three credits. Prerequisite: Twelve credits in Education. Miss Bell. 9-11 M. T. W. T. F. H. 15.

Intended to aid teachers in illustrating their problems through the use of water color, crayon, clay, poster work, etching, and designing. A small fee for supplies.

Ed. s360. Special Problems in Teaching Agriculture. Five hours a week; three credits. Prerequisite: Twelve credits in Education, including Special Methods of Teaching Agriculture. Mr. Cook. 9 M. T. W. T. F. Pe. 201.

This course is for graduates of the Department of Agricultural Education. It will consist of special individual problems and preparation of plans for the next year's work, involving a survey of the school and community in which they are to work the coming year. From this information each student will prepare a program of agricultural education especially adapted to his school and community. It will include classroom arrangements and fixtures, library equipment, gathering specimens and illustrative materials, and the organization of courses of study.

Ed. s361. Methods of Teaching Cooperative Marketing and Purchasing. Four hours a week for three weeks; one credit.

This is to be a seminar designed to meet the needs of vocational teachers in their work in developing agricultural cooperation.

Ed. s364. History of Education. Five times a week; three credits. Mrs. Wallace. 9 M. T. W. T. F. Pu. 8.

This course will include a brief study of European education and its influence upon the American public school, the early development of the elementary and high schools of America, and the present tendencies of our educational system. The period from 1890 to the present will be given special consideration.

Ed. s371. Child Psychology. Five hours a week; three credits. Prerequisite: Twelve credits in Education, six of which must be in Psychology. Mr. Ingebritsen. 9 M. T. W. T. F. H. 5.

This course will consider the results of scientific studies of mental and physical growth from infancy to adolescence. It will emphasize the bearing of instinctive tendencies and social environment on development, the emotional life of children and special problems of behavior, with their application to the training of children in the home as well as in school.

Ed. s372. Operation of School Plant. Five hours a week; three credits. Prerequisite: Twelve credits in Education. Mr. Vaughan. 8 M. T. W. T. F. Page Hall.

Instruction will be given on the maintenance and operation of school heating systems; water, light, and power systems, and transportation methods. The course will consist of lectures, inspection trips, and practical work as applied to the various subjects covered. Members of the State Departments, charged with the responsibility of providing for the operation of school plants, will assist with the course.

Ed. s381. Character Education. Five hours a week; three credits. Prerequisite: Twelve credits in Education. Mr. Cook. 11 M. T. W. T. F. Pe. 201.

A study of the needs for character training, the nature of the problem, present development, difficulties, agencies responsible, results of investigations, materials and methods for teachers.

Ed. s403. Advanced Educational Psychology. Not given in 1933.

Ed. s408. Supervision—The Improvement of Instruction. Five hours a week; three credits. Prerequisite: Eighteen hours in Education. Open to college graduates only. Mr. Highsmith. 10 M. T. W. T. F. Pe. 206.

For principals of high schools, heads of departments, supervisors and teachers.

The problems involved in the supervision of teachers; the planning and organization of supervision; the functions of supervision; rating of principals, supervisors, and teachers; classroom visitation and conferences; the improvement of teachers in the service.

Textbooks, lectures, readings, and reports.

Ed. s412. Occupational Counseling. Five hours a week; three credits. Prerequisite: Ed. 320, 327. Br. Boshart. 8 M. T. W. T. F. H. 16.

Special attention is given to counseling as it may be applied in the junior and senior high schools, colleges, or placement offices, and the method of conducting individual interviews and group conferences. Information covering occupational material will be organized, evaluated, and applied to specific case studies. For teachers of experience and those familiar with personnel work.

Ed. 416. Problems in Agricultural Teaching. Five hours a week; three credits. Prerequisite: Ed. 203, 307, and at least 12 other credits in Education and Agriculture. Experience in agricultural teaching will be accepted in lieu of Ed. 307. Mr. Cook. 9 M. T. W. T. F. Pe. 201.

Investigations, reports, and a critical evaluation of present practices with constructive remedies. The content of the course will depend on the interests and needs of the individual members of the class.

Ed. s418. Mental Testing. Five hours a week; three credits. Prerequisite: Eighteen credits in Education and Psychology. Mr. Ingebritsen. 11 M. T. W. T. F. H. 5.

The first part of this course will be concerned with the history of mental testing. The purpose of this course is to give the student a more thorough acquaintance with the types of tests used in measuring intelligence. Reports on recent studies in these fields are constantly assigned, and a great deal of the discussions are built around these.

ENGINEERING

M. E. s102. Engineering Drawing. Ten or twenty hours a week; three or six credits. Required of Engineering Freshmen. Mr. Foster. 9-1 M. T. W. T. F.; 10-12 M. T. W. T. F. P. 106.

Drawing-board work, covering lettering, orthographic projection, auxiliary projection, isometric projection, cabinet projection, insersection and development, working drawings, and blue-printing.

M. E. s103. Descriptive Geometry. Ten hours a week; three credits. Mr. Foster. 10-12 M. T. W. T. F. P. 106.

This work covers the representation of geometrical magnitudes, by means of points, lines, planes, and solids, and the solution of problems relating to them.

M. E. s107. Mechanical Drawing. Four, seven or ten hours per week; one, two or three credits. Mr. Foster. By arrangement. P. 106.

Drawing-board work, covering machine fastenings, pipe fittings, elementary cams, technical sketching, working drawings, tracing and blue-printing.

M. E. s203. Kinematics. Ten hours a week; three credits. Prerequisite: M. E. 103 and M. E. 107. Mr. Foster. To be arranged. P. 102.

Drawing-board work, covering the forms and motions of machines.

ENGLISH

Eng. s101. Rhetoric and Composition. Five hours a week; three credits. Mr. Fountain. 8 M. T. W. T. F. Pu. 101.

For credit or to remove condition in first-year college English. Study of words: spelling, derivation, definitions, synonyms. Structure of sentences, paragraphs, and whole compositions. Introduction to the writing of description, narration, exposition, and argument. Short exercises and practice papers. Readings in class as drill in accurate interpretation and as models.

Eng. s160. Public Speaking. Five hours a week; three credits. Prerequisite: Eng. 101. Mr. Fountain. 9 M. T. W. T. F. Pu. 101.

A fundamental, practical course in oral expression. Study of the principles of speech composition and delivery; presentation of extempore speeches; exercises in voice technique. The fundamentals aimed at are: thought conception, power of analysis, orderly arrangement of ideas, self-control before an audience, and an effective extempore presentation. Opportunity is given for the preparation and delivery of speeches on topics within the field of the student's vocational major.

Eng. s202. Advanced English Grammar. Five hours a week; three credits. Mr. Harrison. 9 M. T. W. T. F. Pu. 104.

For teachers of English in high schools or in the grades, and for journalists and other creative writers. The science of grammar and the art of its application. The history of forms, inflections, and idioms where helpful in understanding present usage.

Eng. s221. Survey of American Literature. Five hours a week; three credits. Prerequisite: Eng. 101. Mr. Fountain. 10 M. T. W. T. F. Pu. 101.

Equivalent to first term in regular session; to and including works of Thoreau.

A study of the masterpieces and outstanding types of American literature in their historical settings, together with a critical examination of the development of American literary thought and the strong English influence on the literature. Parallel readings will be required as bases for reports and discussions.

Eng. s226. Modern Drama. Five hours a week; three credits. Elective. Prerequisite: English 101. Mr. Fountain. 11 M. T. W. T. F. Pu. 101.

A study of representative modern plays, beginning with those of Ibsen. Special attention will be given to contemporary English and American productions. The drama will be considered as a vehicle of interpretation of modern thought.

Eng. s235. Victorian Poetry. Five hours a week; three credits. Prerequisite: Eng. 101. Mr. Harrison. 8 M. T. W. T. F. Pu. 104.

A study of the principal poets of the Victorian era. Emphasis will be placed on the works of Tennyson and Browning.

Eng. s320. The Short Story. Five hours a week; three credits. Prerequisite: English 101. Mr. Harrison. 10 M. T. W. T. F. Pu. 104.

Development, structure, types, and style of the short story. The more important writers in this form. The contemporary short story in a collection of representative stories and in current periodicals. A manual on the writing of a short story. Practice in writing narratives of fact and of fiction. Individual conferences.

Eng. s337. Contemporary American Literature. Five hours a week; three credits. Elective. Prerequisite: English 101. Mr. Harrison. 12 M. T. W. T. F. Pu. 104.

A study of the leading American writers of the present century, and an attempt to interpret their works against the social background of the period. Some of the chief writers to be studied are as follows: Dreiser, Lewis, Willa Cather, Anderson, in the realm of fiction; Frost, Robinson, Sandburg, Masters, Amy Lowell, in that of poetry; the dramas of O'Neill, and the general literary activity of Mencken will also receive attention.

FIELD CROPS

F. C. s1. Cotton Classing. Twenty hours a week for six weeks. No college credit. Mr. Darst, Mr. Cotner. 9-1 M. T. W. T. F. Pt. 45.

The Summer School of Cotton Classing is designed to prepare men to enter the cotton business and to enable producers to become familiar with grades, so that they may handle their cotton more efficiently from the time it opens in the field until it is baled.

Inefficient handling at the present time is causing the State a loss of millions of dollars annually. The business side of cotton transactions as well as the practical grading and stapling will be included in the course.

Experience will not be necessary for taking the course, as the class will work in groups according to previous training. Students may qualify as competent cotton classers at the expiration of this course.

The course will consist of lectures and daily practice in grading and stapling cotton samples, according to the Universal Cotton Standards, including the descriptive grades as well as the official.

The course will be given each day, with the exception of Saturday, for four hours a day.

The first period of each day will be devoted to lectures and discussions, and the remaining time will be used in the actual practice of grading and stapling of cotton. An expert from the United States Department of Agriculture will assist in this course.

The Cotton Classing course is designed for a special group, and does not carry collegiate credit. There is a flat charge of $27.50 for the whole course

in Cotton Classing. Persons registered for fifty per cent or less of the course will be charged $15.00. All fees paid on or before registration.

F. C. s201. Cereal Crops. Prerequisite: General Field Crops. Five hours a week; three credits. Mr. Darst, Mr. Cotner. 11 M. W. F.; 11-1 T. Th. Pt. 26.

Lectures and recitations in history, production, cultivation, improvement, harvesting, storage, and marketing. Laboratory consists of structural studies, seed judging, variety identification, and commercial grading. Special problems in cereal production.

F. C. s210. Cotton Production, or s215. Tobacco Production. Five hours a week; three credits. Mr. Cotner. 8 M. T. W. T. F. Pt. 45.

Lectures and recitations on history, production, adaptation, types and varieties, including cultivation, harvesting, grading, and marketing, will be given. Laboratory consists of variety studies, the classing of cotton, and the grading of tobacco.

F. C. s330. Advanced Seed Judging and Grading. Prerequisite: Cereals. Five hours a week; three credits. Mr. Darst, Mr. Cotner. 12 M. W. F. 2-4 T. Th. Pt. 26.

Lectures and practice in planning, arranging and judging field crops exhibits. Study of the Federal grain and hay standards. A course planned to develop experts in the judging of field crop seeds and in the grading of grain and hays. A course designed for agricultural extension workers and vocational teachers.

F. C. s351. Advanced Study of Crops Research. Undergraduate credits, 3-9; Graduate credits, 2-6. Elective for graduates and advanced undergraduates. Mr. Darst, Mr. Cotner. By arrangement. Pt. 26.

A field study of the research work and demonstration work in crops. This course will be based directly upon experimental work in progress.

The crop or crops for study will be agreed upon by the class.

F. C. s401. Crop Research. Prerequisite: Eighteen credit hours in Field Crops. By arrangement. Mr. Darst and Mr. Cotner.

GEOLOGY AND PHYSICAL GEOGRAPHY

Geol. s101. Earth History. Five hours a week; three credits. Mr. Stuckey. 9 M. T. W. T. F. Pr.

Open to both college students and teachers who are interested in a better understanding of the world about them.

An introductory course in general geology dealing with the changes which have taken place in the earth and the physical and life processes which have brought about these changes. The first half of the course deals with the processes of physical and dynamical forces while the second half deals with the historical development of the earth as it has been affected by those forces and by life processes.

Geol. s105. Physical Geography. Three lectures; four hours laboratory and field work; three credits. Equivalent to the regular course in physical geography given in the third term of the college year. Mr. Stuckey. 10 M. T. W. T. F. Pr.

The course is intended to give those interested in general science and in teaching a better appreciation of physical geography. It will include an ac-

count of the earth as a planet; the atmosphere; the development of winds and rain; changes in the earth's crust; and the development of relief features and physiographic provinces.

The work of running water, ground water, wind, snow and ice, and forces within the earth as they affect the relief features will be taken up in some detail.

The course will also include a brief consideration of the physical geography of North Carolina.

Geol. s291. Geology of North Carolina. Three lectures; four hours laboratory; three credits. Mr. Stuckey. 12 M. W. F. Laboratory by arrangement. Pr.

Elective for students in the Schools of Engineering and Science and Business who have had Geol. 101 or 120.

Also open to teachers who are interested in the geology of North Carolina and who may be interested in helping students to collect and assemble groups of the common rocks and minerals from different sections of the State.

The course will cover the physical geography, general geology, common rocks and minerals, and mine and quarry products of the State.

HISTORY

Hist. s101a. American Economic History. Five hours a week; three credits. Mr. Goehring. 8 M. T. W. T. F. Pu. 6.

Discovery, colonization, economic background of the Revolution, government foundations, wars, presidential administrations, public lands, public finance, agriculture and industry.

Hist. s101c. Commercial Geography (Commercial and Industrial). Five hours a week; three credits. Mr. Goehring. 11 M. T. W. T. F. Pe. 109.

This course is designed to prepare teachers of geography in the high schools as provided for in the plan of High School Reorganization as well as for students in the School of Science and Business. Geographical conditions affecting industries, production and commerce of the world; development and relations of commercial areas to location and availability of resources; markets and transportation routes.

Hist. s201c. Contemporary Europe. Five hours a week; three credits. Mr. Barnhardt. 9 M. T. W. T. F. Pu. 6.

This course deals with the economic, social, and political developments in Europe from 1870 to the present time. Special emphasis is laid upon the causes of the World War. The war is studied in outline and attention is given to post-war conditions.

Hist. s209. Government. Five hours a week; three credits. Mr. Barnhardt. 10 M. T. W. T. F. Pu. 6.

Organization and activities of our local, State and National governments, party politics; economic, social, and legal factors in the functioning of government.

Hist. s302. Recent U. S. History. Five hours a week; three credits. Prerequisite: History 101. Mr. Barnhardt. 8 M. T. W. T. F. Pu. 6.

The Civil War, reconstruction, development of West and South, transportation, rise of big business and organized labor, political parties, movements

for reform, the free silver movement, war with Spain, American expansion, rise of the Progressive Party, Roosevelt, Taft and Wilson; the World War and problems of Reconstruction, the Harding-Coolidge administration.

Hist. s303. History of North Carolina. Five hours a week; three credits. Prerequisite: History 101. Mr. Barnhardt. 11 M. T. W. T. F. Pu. 6.

The purpose of this course is to give the teachers of North Carolina and others a general view of the political, economic, and social development of North Carolina from colonial beginnings to the present day. A brief survey will be made of the settlement of North Carolina, the various racial groups which colonized, agriculture, industry, and commerce in the colonial era, and the relations of the province to England. A more detailed study will be made of North Carolina between the Revolution and the Civil War, emphasis being given to North Carolina and states' rights, social conditions, slavery and the free negro, agriculture and industry, and the beginnings of public school education. Particular emphasis will be placed on the recent development of the state, the rise of textile, tobacco, and other industries, the development of agriculture, public schools and higher education, good roads, and other factors in recent North Carolina progress.

MATHEMATICS

Math. s100. Mathematical Analysis. Five hours a week; three credits. Prerequisite: Algebra to quadratics and Plane Geometry. Mr. Williams. 10-11 M. T. W. T. F. P. 101A.

The course treats of Algebra, Trigonometry, and Analytical Geometry. It emphasizes graphical methods in the solutions of equations.

Math. s101. Algebra. Ten hours a week; five credits. Prerequisite: Algebra to quadratics and Plane Geometry. Mr. Mumford. 11-1 M. T. W. T. F. P. 101B.

This course includes the progressions, binomial theorem, undetermined coefficients, logarithms, compound interest and annuities, permutations, combinations, the general theory of equations, the solution of higher equations, etc.

Math. s102. Solid Geometry. Ten hours a week; five credits. Prerequisite: Plane Geometry. Mr. Mock. 11-1 M. T. W. T. F. P. 203.

The three books of Solid Geometry, including numerous original exercises, are covered in this course.

Math. s103. Plane Trigonometry. Ten hours a week; five credits. Prerequisite: Algebra through quadratics and Plane Geometry. Mr. Fisher. 8-10 M. T. W. T. F. P. 209.

Definitions of the trigonometric functions, derivation of formulæ, solutions of plane triangles, solutions of many practical problems, etc.

Math. s104. Analytical Geometry. Ten hours a week; five credits. Prerequisite: Mathematics 101, 103. Mr. Mumford. 8-10 M. T. W. T. F. P. 101B.

Loci of equations, the straight line, circle, parabola, ellipse, hyperbole, and the general equation of the second degree.

Math. s201. Differential Calculus. Ten hours a week. Five credits. Prerequisite: Mathematics 104. Mr. Mock. 8-10 M. T. W. T. F. P. 203.

An elementary course on the fundamental principles of the Calculus, including the development of the formulæ for differentiation with their applications to the problems in rates, maxima and minima, etc.

Math. s202. Integral Calculus. Ten hours a week; five credits. Prerequisite: Mathematics 201. Mr. Fisher. 11-1 M. T. W. T. F. P. 209.

Development of formulæ for integration and their application to definite integrals, areas under curves, lengths of curves, volumes of solids, centers of gravity, centers of pressure, and moments of inertia.

Math. s303. Differential Equations. Five hours a week; three credits. Prerequisite: Mathematics s203. Mr. Fisher. 11-12 M. T. W. T. F. Page 209.

This is a short course to include the solutions of equations which occur in scientific work and engineering practice.

Math. s341. See Ed. s341 for description.

*MODERN LANGUAGES

French

Mod. L. s104. French Prose. Five hours a week; three credits. Mr. Hinkle. 8 M. T. W. T. F. Pe. 212.

This course consists of readings and translations based upon selections from representative modern French authors. Rapid reading and sight translation are stressed.

Mod. L. s313. French Prose Masterpieces. Five hours a week; three credits. Mr. Hinkle. 9 M. T. W. T. F. Pe. 212.

This is a reading translation course developing facility in French for purposes of investigation. The class work is supplemented by lectures and reports in such a way as to give a general survey of French literature.

German

Mod. L. s102. Elementary German. Five hours a week; three credits. Mr. Hinkle. 10 M. T. W. T. F. Pe. 212.

This course is intended for students who have had little or no previous training in German as well as those who may wish to review the elements of German grammar and pronunciation. It consists of reading and translation with the elements of grammar. Practice in the pronunciation and understanding of German is given by means of dictation and oral practice.

Mod. L. s105. German Prose. Five hours a week; three credits. Mr. Hinkle. 10 M. T. W. T. F. Pe. 212.

Grammar, composition, and translation continued. Rapid reading and sight translation stressed. General survey of German literature is made. Selections from modern German classics are studied in class.

Mod. L. s107. Scientific German. Five hours a week; three credits. Mr. Hinkle. 10 M. T. W. T. F. Pe. 212.

This a reading course in elementary scientific literature. A study of scientific construction is made, and attention is given to the acquisition of a scientific vocabulary.

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*NOTE. Courses in this department may be taken for double credit with the consent of the teacher concerned and the approval of the Director of the Summer School.
The courses in French and Spanish are given alternately.
Students wishing graduate credit in languages should consult the Head of the Department of Modern Languages before registering.

Mod. L. s103. Elementary Spanish. Five hours a week; three credits. Mr._____. 11 M. T. W. T. F. Pe. 212.

This course is intended for students who have had little or no previous training in Spanish. It consists of reading and translation with the elements of grammar. Practice in the pronunciation and the understanding of Spanish is given by means of dictation and oral practice.

Mod. L. s106. Spanish Prose. Five hours a week; three credits. Mr. _____. 12 M. T. W. T. F. Pe. 212.

This course consists of readings and translations based upon representative Spanish authors. Reading and sight translations are stressed. The class work is supplemented by lectures and reports in such a way as to give a general survey of Spanish literature.

PHYSICS

Physics s110. General Physics and Physics for Textile Students. Four or eight credits. Five hours class work, one 2½ hours laboratory each week for four credits. Double this for eight credits. Mr. Heck. 9 M. T. W. T. F. 2-4 Tu.; 9-11 M. T. W. T. F.; 2-4 T. T. P. & E. 212.

A course covering the whole field in condensed form. It is especially designed for high school teachers, containing method as well as subject matter. The materials discussed give a broad background of additional subject matter with which to supplement a like course given in high school. It is given in halves taken simultaneously. At nine, force and machines, heat and weather, sound and the physics of music are given. At ten, light and the general field of electricity and the electrical nature of matter are given. Either half may be taken and four college credits earned, substituting for the corresponding term of Physics 101. Two afternoons of laboratory accompany each half.

Physics s104. Five or ten credits. Mr. Lancaster. 8 M. T. W. T. F.; 2-4 M. W.; 8-10 M. T. W. T. F.; 2-4 M. T. W. T. F. P. & E. 212.

An advanced treatment of General Physics. First, second, or third terms work may be taken or any two terms taken simultaneously.

Graduate courses in physics will be given if there is sufficient demand.

Physics s107. Descriptive Astronomy. Five hours a week; three credits. Mr. Heck. 12 M. T. W. T. F. P. & E. 212.

A descriptive course covering the most interesting elements in the study of the sun and planets and the stars. The modern interpretation of the universe as a whole given in this course makes it valuable as a background to a student or teacher of any subject. Observation periods, using the telescope on top of the physics building, will be substituted at times for class lectures.

Physics s411. Research.

PHYSICAL EDUCATION

NOTE.—Summer School students are very desirous of getting in coaching courses but find it difficult to schedule them in addition to other required subjects. The coaching courses of the regular term have been combined, to

make it possible for students to get instruction in all the major sports if they so desire. These classes meet daily, each sport covering one-half the summer term.

P. E. s112. Theory and Practice Football Coaching. Three hours theory, one hour practice; two credits. Mr. Miller. By arrangement. Gym.

This course will cover the equipment, schedule making, rules, individual position play, offensive and defensive team play, individual technique, team strategy, training and conditioning.

P. E. s113. Theory and Practice Basketball Coaching. Three hours theory, one hour practice; two credits. Mr. Miller. By arrangement. Gym.

This course will cover the equipment, schedule making, rules, individual technique, offensive systems, defensive systems, training and conditioning.

P. E. s114-115. Theory and Practice Track and Baseball Coaching. Five hours theory, one hour practice; three credits. Mr. Miller. By arrangement. Gym.

Track will be covered the first half of the term. The equipment, rules, individual technique, practice organization, administration of meets will be thoroughly discussed and opportunity given for practical demonstration. Baseball will be covered the last half of the term covering individual technique in all fundamentals of individual play, offensive and defensive baseball.

P. E. s117. Physical Education and Recreational Programs. Five hours theory, one hour practice; three credits. Mr. Miller and Miss Crow. By arrangement. Gym.

This course is designed to aid those teaching in smaller high schools and grades to meet the demand made of them in assisting in the physical education programs of their school. Both the formal work consisting of calisthenic drill, marching, dancing, and apparatus work and the informal work consisting of group games, sports and efficiency tests will be covered. The organization and the administration of the class work will be stressed. Mr. Miller will teach the men's section in this course and Miss Crow will teach the women's section.

POULTRY SCIENCE

Poul. s302. Poultry Nutrition. Five hours a week; three credits. Mr. Williams or Mr. Dearstyne. 8 M. T. W. T. F. R. 205.

This covers the field of poultry nutrition including poultry physiology of digestion, absorption, metabolism, elimination of waste, requirements of animal and vegetable proteins and of fats and carbohydrates; mineral requirements for the body function and body growth, vital elements, deficiency of feed stuffs, digestibility and nutritive ratio for different feeding purposes, a discussion of grains and mill by-products, animal feeds, green feeds, mineral supplements, feed stuffs that are injurious, spoiled and diseased, rations and methods of feeding laying hens, for growth, fattening, breeding stock, handling layers under artificial lights. Estimate possible production. Feeding turkeys, ducks, geese and pigeons.

Poul. s304. Poultry Diseases. Five periods a week; three credits. Mr. Dearstyne. 10 M. W. F.; 2-4 M. W. R. 205.

Medical parasitology, poultry plant problems and control. Systematic study of non-contagious and contagious diseases and practical means of control.

Serotherapy, vaccination and agglutination tests as applied in poultry disease control work. Autopsies and means of recognition of disease and laboratory technique on the detection of the presence of contagious diseases.

Poul. s306. Commercial Plant Management and Commercial Incubation. Five hours a week; three credits. Mr. Williams. M. T. W. T. F. Ricks.

A study of the construction and operation of commercial incubators. The development of community hatcheries. Incubator sanitation. The development of commercial poultry plants and their operation. Course includes an outline of breeding practices, culling, egg grading, and marketing.

SOCIOLOGY

Soc. s102. Introductory Sociology. Five hours a week; three credits. Mr. Winston. 11 M. T. W. T. F. Pu. 8.

This course offers an inductive introduction to the field of Sociology by taking up a number of social problems which are already somewhat familiar to every one. These problems confronting every community and our general citizenry. The outstanding problems to be considered are: poverty, crime, divorce, immigration, population and race problems. This course, therefore, is a natural introduction to the Sociology courses, which deal more directly with social theory.

Soc. s103. General Sociology. (1st term.) Five hours a week; three credits. Mr. Winston. 10 M. T. W. T. F. Pe. 108.

The course deals first with the basic principles of sociology, then analyzes society and its influence on human behavior.

Soc. s300. Criminology. Five hours a week; three credits. Prerequisite: Soc. 103. Mr. Winston. 8 M. T. W. T. F. Pe. 108.

This course will take up the causes and conditions leading to crime, and study the methods of handling criminals. It will discuss the influence of various factors in producing criminal behavior.

Soc. s306. The American Family. Five hours a week; three credits. Prerequisite: Soc. 103 and three additional term credits in Sociology. Mr. Winston. 9 M. T. W. T. F. Pe. 108.

A study of family relationships, of the relationship between husband and wife, parents and children, with particular emphasis on the development of personality. The effect of present-day social changes upon the family and the changes in family life as a result will be studied. Discussion of various efforts to stabilize the family. The part habits play in successful and non-successful marriages will also be discussed.

SOILS

Soils s220a. Soil Geography of the United States. Five periods a week; three credits. Mr. Cobb. 8 M. T. W. T. F. Pt. 16.

A course dealing with the characteristics and distribution of the soil groups of the United States and their influence on the agricultural, grazing and forest industries of the country.

Soils s310. Fertilizers. Four hours of class and one laboratory period a week; three credits. Mr. Cobb. 10 M. T. W. T. Laboratory to be arranged. Pt. 16.

A study of the sources, characteristics and utilization of fertilizers.

Soils s315. Soils of North Carolina. Four hours of class, one laboratory period a week; three credits. Mr. Cobb. 11 M. T. W. T. Laboratory to be arranged.

A study of the origin, characteristics, distribution and utilization of North Carolina soil types.

TEXTILES

Tex. s107. Power Weaving. Two credits. Mr. Nelson. By arrangement. Textile Building.

Construction of auxiliary motions on plain looms. Cams and their construction. Drop-box loom construction. Methods of pattern chain building. Construction and value of pattern multipliers. Timing of drop-box motion, and other studies.

Tex. s108. Power Weaving Laboratory. One or two credits. Mr. Hart. By arrangement. Textile Building.

Operation and fixing of plain, automatic and drop-box looms. Pattern chain buliding for drop-box looms.

Tex. s115. Textiles for Teachers. Five hours a week; three credits. Mr. Nelson. 8 M. T. W. T. F. Textile Building.

This course is designed to give a fundamental knowledge of fabrics. It will include a study of various fabrics and their selection and adaptability to different uses. Various methods of distinguishing fabrics made from different materials such as cotton and rayon, cotton and wool, wool and silk, and other combination of yarns will be given and analysis made of the fabrics. In addition, a general survey of the various processes through which cotton passes in its transition from the raw material to the finished product will be studied.

Tex. s205. Fabric Design and Analysis I. Three or six credits. Mr. Hart. By arrangement. Textile Building.

Construction of fancy weaves, such as broken twills, curved twills, entwining twills, granite weaves. Imitation leno; honeycomb weaves; fabrics backed with warp or filling; fabrics ornamented with extra warp or filling; combining weaves together to produce new patterns.

Analyzing samples of fancy fabrics for design, drawing in draft, reed, and chain plan. Calculating particulars to reproduce fabric from data obtained from sample.

Tex. s207. Dobby Weaving. Three credits. Mr. Nelson. By arrangement. Textile Building.

Methods of drawing in and starting up cotton and rayon warps. Setting of harness shafts. Selection of springs or spring jacks. Construction and methods of fixing single and double index dobbies. Methods of pattern-chain building.

Tex. s208 or s209. Dobby Weaving Laboratory I or II. One, two, three, or six credits. Mr. Hart. By arrangement. Textile Building.

Preparation of warps for weaving cotton and rayon fabrics on dobby looms; starting up warps in looms; fixing single and double index dobbies; pattern chain building; operation of dobby looms.

Tex. s404. Textile Fabrics: Their Qualities and Uses. Three credits. Mr. Nelson. By arrangement. Textile Building.

Analyses and illustrations of standard, fancy, and novelty fabrics. Determination of fabric content. Construction of fabrics. Determination of quality in fabrics. Common defects in fabrics, and their causes. Methods of testing fabrics for strength, elongation, and durability.

ZOOLOGY

Zool. s101. General Zoology or Economic Zoology. Six recitation periods; four hours laboratory; four credits. Mr. Mitchell.

General Zoology—An elementary study of vertebrate anatomy. This is equivalent to the first term course of the regular college year. A study is made of the systems of organs of a typical mammal, with their functions and their modifications in other vertebrates, coupled with the consideration of the fundamentals of the science of Zoology. This course is foundational to such fields as Animal Physiology, Psychology, Animal Husbandry and Poultry.

Economic Zoology—A survey of the Animal Kingdom, with special reference to the more important economic groups. This is equivalent to the second term course of the regular college year. A study is made of the fundamental differences between the various groups of animals, with special emphasis on the economic aspects of each group, coupled with such general considerations as distribution, relations to environment, evolution, etc. This is foundational to such fields as Entomology, Parasitology, General Agriculture, etc.

One or the other of these courses will be given, depending upon the demands or needs of the students.

Zool. s102. Physiology. Five times a week; three credits. Prerequisite: Zool. 101. Mr. Bostian.

A course devoted to the comparative physiology of vertebrate animals, with particular reference to mammals and man. Detailed studies are made of the various functions, with special emphasis on metabolism.

Zool. s202. Economic Entomology. Five times a week; three credits. Required of sophomores in Biological Science and of juniors in Agriculture. Prerequisite: Zool. 101. 8 M. W. F. Four hours laboratory by arrangement. Mr. Mitchell. Z. 8.

A general study of the insects, with particular reference to their economic importance, placing special emphasis on the control of the more important species occurring in North Carolina.

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Summer School

JUNE 13—JULY 24, 1934

Announcement of Courses

NORTH CAROLINA STATE COLLEGE
OF
AGRICULTURE AND ENGINEERING
OF THE
UNIVERSITY OF NORTH CAROLINA
STATE COLLEGE STATION
RALEIGH

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SUMMER SESSION, 1934

In accordance with the plans that are being carried out in the consolidation of the Greater University of North Carolina, the summer schools of the University at Chapel Hill, of the State College of Agriculture and Engineering at Raleigh, and the Woman's College at Greensboro have been united into one organization. A Director for all three of the schools has been appointed with an Associate Director for each of the individual units. The work of the three divisions will be arranged according to function.

Elementary Education will be the distinctive field of work at Greensboro; Agricultural, Vocational and Technological training at State College; and Secondary Education and Graduate work the distinctive field at the University at Chapel Hill.

There will be a single session of six weeks at all three of the institutions, with a second term of six weeks at Chapel Hill only. The work of the three institutions is being correlated and coordinated in such a way that the students and teachers of the State may be better served than hitherto.

The twenty-first Summer Session of the North Carolina State College of Agriculture and Engineering of the University of North Carolina, begins Wednesday, June 13th, and closes Tuesday, July 24th. In the courses given, the work will be directed primarily to the needs of the teachers in secondary education and to the regular college students working for a degree. The usual technical courses will also be offered, as well as courses for teachers of Industrial Arts who hold a certificate of Grammar Grade C or higher.

In addition to the subject-matter courses open to all students who have graduated from high school and particularly suitable for those persons preparing to teach in the secondary schools, there will be the usual methods courses.

The State College Summer School is desirous of using its faculty and laboratories, which are particularly well prepared and equipped in the scientific and technical fields, to meet the rapidly developing needs of the State.

INSTITUTE OF EDUCATION

During the week of June 25, a series of Conferences will be held in Raleigh, Chapel Hill, and Greensboro in connection with the Summer Session of the University, with lectures and round-table discussions by distinguished leaders in American education. The theme of the Conferences will be "The Place of Education in the Program of Reconstruction." A complete program of each Conference will be announced later.

Among the distinguished visitors who will participate in the Institute are Professors William H. Kilpatrick, George D. Strayer, George S. Counts, John K. Norton, Edward H. Reisner, Jesse H. Newlon, Louis C. Mossman, John J. Coss, of Columbia University; Dean Malcolm MacLean, of the University of Minnesota; Professor Edwin H. Reeder, of the University of Vermont; Dr. Sidney B. Hall, State Department of Education of Virginia; Mr. J. C. Wright, United States Office of Education; Governor J. C. B. Ehringhaus; Dr. Clarence Poe, editor of the *Progressive Farmer;* and others.

Many of these visitors will lecture and conduct discussions in Education 107.

CONFERENCE ON LABOR AND INDUSTRIAL RELATIONS

In connection with the Institute of Public Welfare, which is held annually at Chapel Hill in cooperation with the State Board of Charities and Public Welfare, there will be held in the week of July 16 to 20 a Conference on

the important question of *Labor and Industrial Relations.* This Conference will probably be held partly in Raleigh and partly in Chapel Hill. The program is being worked out with the cooperation of the State Department of Labor, the Commissioner of Charities and Public Welfare, and other State leaders, and with officials of the United States Government in the Department of Labor in Washington. Full details of this Conference will be announced later.

AGRICULTURE

It is the purpose of the Summer School of State College to render every possible service to the farmers of North Carolina and to all those interested in helping the farmers with their many intricate problems. The "New Deal" in agriculture calls for an entirely new approach to the whole farm situation. The Agricultural College, including the Experiment Station, occupies a position of leadership in this field, and will offer during the Summer School courses for teachers, students in agriculture, farmers and any others wishing to take advantage of the facilities of the College.

COTTON CLASSING

The Cotton Classing course in the Summer School offers intensive work in the grading and stapling of cotton.

The course consists of lectures and daily practice in grading and stapling, according to the "Universal Cotton Standards."

This work is designed to prepare men to enter the cotton business and to give intensive training for men who are now in active service. (See description of the course on page 15.)

HIGH SCHOOL PRINCIPALS AND SCIENCE TEACHERS

There will be offered for principals and teachers of high schools, both professional and subject-matter courses. Special courses in methods of teaching high school science, together with courses in the various physical sciences, will occupy a large place in the Summer School. This is made necessary by the demand throughout the State for professionally trained teachers of science in the secondary schools. Teachers planning to take these courses are requested to bring their high school texts.

CURRICULUM STUDY PROGRAM IN NORTH CAROLINA

The Summer School at State College will be definitely identified with the curriculum construction program which is being carried on by the State Department of Public Instruction. Dr. J. Henry Highsmith, Director of the Division of Instructional Service, will offer this summer not only his usual courses but a new one—namely: Education s334, High School Course of Study. This course will deal entirely with certain phases of the high school curriculum, and is a very definite part of the curriculum program itself.

In addition to the work offered by Dr. Highsmith, attention is called to the following courses in Education which may contribute directly to the curriculum program:

Education s250	Education s341
Education s303	Education s353
Education s320	Education s354
Education s331	Education s360
Education s337	Education s381
Education s339	Education s416
	Physical Education s117

These courses cover a wide range of work and offer opportunity, therefore, for a teacher to pursue his own particular interest.

INDUSTRIAL ARTS

During the Summer School emphasis will be given to the preparation of teachers of industrial arts for the various communities of North Carolina. The rapid growth of industrial education in our State is creating a demand for supervisors and teachers who are competent to develop it in the right direction. Courses will be given in shop practice, mechanical drawing, methods of teaching, subject-matter, and administration.

Supervisors and teachers are needed for the work in the junior and senior high schools, part-time and continuation schools, and evening schools. The need is for those who are familiar with both general and vocational education and are capable of placing the proper emphasis on the courses to be outlined for a particular locality.

Industrial arts education depends largely upon the soundness of the philosophy concerning the type of training which underlies the introduction of industrial studies. For this reason those professionally minded teachers with vision will welcome courses giving them a better basis for their work in the classroom.

The purpose of the courses in Industrial Arts for the Elementary School is to create interest in these problems using them to motivate the elementary school subjects and to prepare teachers and supervisors who will become leaders in introducing this work in their school systems. Credit for these courses may be used either in raising or renewing certificates.

Teachers desiring to raise or renew their certificates will take the first two of the courses in the list following, and one course selected from the remainder of the list.

Ed. s353. The Theory of Industrial Arts in the Elementary School. Five hours a week; three credits.

***Ed. s354. Practical Arts Problems.** Ten hours a week; three credits.

Tex. s115. Courses for Teachers. Four hours a week; two credits.

Ed. s203b. Educational Psychology. Five hours a week; three credits.

Ed. s320. Vocational Guidance. Five hours a week; three credits.

***Ed. s355. Art Studies in the Elementary School.** Ten hours a week; 1½ or 3 credits.

Ed. s381. Character Education. Five hours a week; three credits.

NOTE.—The above courses are described elsewhere in this bulletin.

TEXTILES

The Textile School at State College occupies a place of merited leadership in this country. A State with North Carolina's rank in the textile field needs to take advantage of the latest things in research and training in this North Carolina's largest industry. The Textile School offers its equipment and faculty to the people of the State during the Summer School.

Courses in textiles designed for men who are employed in the manufacturing plants, as well as courses for teachers who are employed in the textile communities, will be given. These courses will be arranged on a unit basis in order to meet the needs of the various groups who may wish to come to the College for different periods.

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*A fee of $1.00 will be charged those taking Ed. s354 and Ed. s355 to pay for the materials used.

VOCATIONAL GUIDANCE

Guidance is recognized as a part of the work of each teacher in the school. Pupils of all ages require assistance in their growth and progress through their school problems. Each stage of school development as elementary, junior high, senior high, and college requires special attention which the individual teacher may render. In addition to the work done in the classroom, there is that of the school counselor and director of the work whose duty it is to provide materials and programs of work, together with the care of such special cases as requires specific aid.

Vocational Guidance, Ed. s320, is a beginning course for advanced undergraduates and graduates, also for teachers in service who wish to help in guidance activities. Occupational Counseling, Ed. s412, is a graduate course for those who have had Ed. s320 and some experience in teaching, and those who have had a wider experience in school and industry. Closely correlated with these courses are those in psychology, sociology, economics and testing.

PHYSICAL EDUCATION AND COACHING

The Summer School will offer opportunity for coaches and teachers of physical training to take specialized courses in the Department of Physical Education. The courses in athletic coaching and physical training are arranged especially for instructors already engaged in teaching during the regular school year and for others who wish to supplement the preparation they may have received in college. The courses take up the more important problems of coaching, and are designed for the purpose of fitting men more completely to take charge of athletics and physical training in schools and colleges throughout the country, and for fitting women to coach basketball, and direct physical training programs.

The College has now arranged as one of the options in the training of high school teachers, physical education. This permits a student to elect physical education as one of the fields in which he is preparing to teach, and by completing the requirements of this option, and one other, to be certified by the State Department of Education to teach in the two fields. The College has not been able to supply the demand for men with this training.

Leaders in education now recognize the fundamental need of athletics as an important part of any broad educational program. The demand for competent teachers, supervisors, and directors far exceeds the supply. This is especially true in case of men qualified both in coaching and in conducting classes in physical training. Our schools are seeking men who are college trained to take charge of their athletics; men who are versed in all phases of athletic coaching and administration. Approximately thirty-six states in the Union now have adopted legislation making physical education a prescribed part of the elementary and secondary school program.

MUSIC AND ASSEMBLIES

The success of the musical organizations of the Summer School under the direction of Mrs. Lillian Parker Wallace has elicited favorable comment from friends throughout the city. These are voluntary organizations and Mrs. Wallace kindly gives her services to these groups without charge. Students interested in music should by all means bring their musical instruments with them.

Only one assembly period per week will be provided. Interesting programs will be arranged for each of these. All students and faculty members are expected to attend these assemblies.

RECREATION

There will be supervised recreation, consisting of tennis tournaments, baseball, volleyball, basketball and handball. Instruction in swimming will be provided for both men and women. The new swimming pool, lockers and showers, and other gymnasium facilities will be available to all students.

A popular occasion during the 1933 Summer School was the ALL COLLEGE PARTY. These parties give an opportunity for the students and faculty to know each other better by playing and dancing together. More of these will be provided in 1934.

COLLEGE CREDIT

Beginning with 1924-1925, the regular session of State College was divided into three terms; consequently "credit," as used throughout this bulletin, refers to term credit, or twelve weeks work, unless otherwise designated. Therefore, in order for the college-credit courses to count for a full term's work, they will be given, if for five credits, ten periods a week; if for three credits, five periods a week. Since, however, no student will be allowed to take more than eighteen hours of work per week without special permission, this restriction will prevent student's taking more than one ten-period course.

Thirty days of work during the six weeks will be accepted as meeting Summer School requirements if all the demands of the course are met. This includes one day for registration and one day for examination.

The courses for college credit are open to graduates of standard high schools, and to others of equal qualifications. These courses give college students the opportunity to remove conditions, so that they may enter their classes in the fall in full standing. They will also make it possible to secure advanced credit. The college-credit courses are also open to teachers who hold standard State certificates.

All professional courses offered will have value both for teachers' certificates and for college credit. The subject-matter courses may be counted by teachers for academic credit towards securing or raising their certificates.

PROVISION FOR BOTH MEN AND WOMEN

All courses are open to both men and women. Special accommodations in the dormitories are provided for the women, and special attention will be given to their comfort and welfare.

The fifth dormitory will be set apart for women in attendance upon the Summer School and will be under the supervision of Mrs. Mary Smithwick, who has served so efficiently for several summers. The sixth dormitory will be reserved for married couples wishing to attend Summer School.

The variety of courses offered during the State College Summer School should appeal not only to those women in the teaching profession, but to those who are interested in taking advantage of these courses in preparation for other vocations and leading toward a college degree. Young women living in Raleigh and in nearby territory who are working for a college degree should take advantage of this opportunity.

EDUCATIONAL FORUM

An open forum for discussion of timely subjects in the several larger fields of study in the College will be conducted for the benefit of Summer School students. These meetings will consist of an opening lecture by a recognized leader in his field, followed by a period of round table conference. These meetings will be as frequent as the attendance and interest will warrant.

PERSONAL PROBLEMS CONFERENCE

In view of the unusually difficult conditions under which teachers are working, the Summer School is providing for a weekly conference period of faculty and students for the consideration of urgent problems in fields in which students may not be able to get sufficient information and help in regular courses. The conference plan will have the advantage of having a number of faculty members in attendance to bring in their individual experience and points of view bearing on the problem under consideration. This plan aims to afford students the opportunity to have light thrown upon just as many of their general and individual problems as possible.

OPPORTUNITY FOR INTERVIEWS

Members of the faculty will maintain office hours for consultation with students on problems related to their respective fields of work.

In addition to regular personal and professional assistance the State College faculty is always anxious to give, it should be of tremendous value to teachers to attend Summer School in Raleigh where they are in easy access to the various State departments. This is especially true in connection with personal interviews teachers may arrange with heads of divisions in the State Department of Education. The Director's office will be glad to aid in arranging for these interviews.

SPECIAL FEATURES

A reception for students and faculty, followed by other social and recreational events such as week-end picnics and excursions, serve to foster a congenial spirit in the student body, as well as to keep students physically and mentally fit for efficient study.

FEES AND EXPENSES FOR SIX-WEEKS PERIOD

All fees and other charges are payable in advance or upon registration, and all checks should be payable to North Carolina State College.

Room Rent (per person)	$ 7.50
Board at College Cafeteria	25.00
College Fees	
For Residents of North Carolina	27.50
For Non-Residents	40.00

All students occupying a room alone will be charged $10.00.

Students taking in excess of the normal load of three courses, not exceeding eleven credits, will be charged a fee of $5.00 for each additional course. Double courses will be counted as two courses.

There will be a key deposit of twenty-five cents, which amount will be refunded when the key is returned.

BOARD AND LODGING

The College dining room will not be kept open during Summer School. The cafeteria, which is in the same building with the dining room, will be run for the benefit of the Summer School students and faculty.

A great many members of the faculty and regular college students eat in the cafeteria and find it very satisfactory, and about as cheap as the dining room, with the addition of greater variety from which to select, and longer

periods in which to eat. The cafeteria charges are reasonable. Students may pay for meals a la carte or they may buy tickets for the six weeks for $25.00.

Students will be assigned to rooms upon their arrival at the College. In case it is desired to change the room assignments, permission to do so must first be obtained from the Superintendent of Buildings. In no case may a room be taken until it has been regularly assigned.

WHAT STUDENTS NEED FOR THEIR ROOMS

The College rooms are supplied with necessary furniture. Each student, however, should bring towels, sheets, one pillow and two pillow cases, and two bedspreads for a single bed.

REGISTRATION

All registrations will be conducted in Frank Thompson Gymnasium beginning at 9 a.m., on June 13th. Students are expected to report in person on Wednesday, June 13th, so that they may begin class work on the morning of Thursday, June 14th, at 8 o'clock. Deans and Directors of Instruction will be present to advise students relative to courses. The administration reserves the right to cancel any course for which the registration is less than eight.

DIPLOMAS

Students expecting to receive a degree at the end of the Summer School should come to the Office of Registration early in the session and check up on all credits; also check their names as to correctness of spelling, etc., in order that they may appear properly upon the diploma.

HOURS OF WORK

It is important to notice that teachers are required to take at least fifteen hours weekly in order to receive credit for one summer session. Additional credits may be taken by students if they have points to justify, and by teachers on approval of the Director. However, a fee of $5.00 will be charged for the extra course above the three allowed as a normal load, in no case to exceed eleven credits. In no case will a student be allowed more than twelve credits per week. Each student will be allowed to audit a class five times, if agreeable to instructor.

THE ATTRACTIONS OF RALEIGH

Being the capital of one of the original thirteen states, Raleigh is unusually rich in historical collections, fine public buildings, and interesting places and memorials. It is interesting, also, for its churches, its schools, its hotels, its office buildings, and its growing commercial and industrial activities. Opportunities will be given the students to visit the places of interest.

The various churches welcome all Summer School students to Sunday school and church services, and their pastors have taken a very friendly interest in the morning services at the College auditorium. Raleigh will be found in all respects a delightful place of residence.

THE SOCIAL CENTER

The Y. M. C. A. building will be the social center of the school. This building contains a reading room, and auditorium, several reception rooms, telephone booths, and other conveniences for the promotion of the social life of the students.

THE D. H. HILL LIBRARY

The D. H. Hill Library, one of the most beautiful libraries in the South, will be open for the use of Summer School students. Its spacious reading and periodical rooms afford an opportunity for research and study under the most pleasing conditions. The consolidation of the various departmental libraries into the central library, have greatly increased the library facilities. The library maintains a competent staff adequate to render every possible library service.

The Olivia Raney Library and the State Library will also be open to Summer School students for reference work.

FRANK THOMPSON GYMNASIUM

The Frank Thompson Gymnasium is without doubt the finest and best equipped gymnasium in the South. The main floor is 130 by 110 feet, with an inter-collegiate basketball court of maximum size, and seating capacity for 2,500 spectators without using the gallery. Two maximum sized cross courts make it possible to run off class and tournament games. The auxiliary gymnasium or exercise room is 110 by 40 feet. Both of these rooms are equipped with full gymnasium apparatus and handball courts. The basement is fitted up with 1,000 private steel combination lockers. Team training rooms, equipped with private showers and lockers, a towel service room, an equipment room, and a wrestling and boxing room compose one-half of the basement. The other half is given over to the armory.

The swimming pool is located in an annex amply lighted both by windows and skylights, and finished with white tile. The pool is 75 by 30 feet, with room sufficient to accommodate several hundred spectators.

MEETING OF TEACHERS OF AGRICULTURE AND YOUNG TAR HEEL FARMERS

The annual conference of North Carolina teachers of vocational agriculture will be held at State College on June 18, 19, 20, and 21.

The annual meeting of Young Tar Heel Farmers, a statewide organization of students of vocational agriculture, will be held at State College, June 22, and 23.

SCHOOL FOR JANITORS AND FIREMEN

The Mechanical Engineering Department of North Carolina State College, as a feature of the Summer School, conducts a short course of six days for white janitors and firemen, teaching the fundamental principles of combustion, how to fire economically, and general instructions about heating systems and operation of the plant. The mornings are given to lectures and talks by members of the College faculty and representatives from other State departments, and the afternoons are given over to the practical problems and to inspection trips to different schools. The total cost which includes cost of registration and room rent will not exceed $3.00. Board is not furnished, but can be secured from the College Cafeteria. The 1934 school will be held the week of July 23-28. Applications for admission should be sent to Professor L. L. Vaughan, North Carolina State College, Raleigh, North Carolina.

COURSES TO BE OFFERED IN THE SUMMER SCHOOL

ABBREVIATIONS FOR BUILDINGS

C.—Ceramic
G.—Gymnasium
H.—Holladay
P.—Page
P. & E.—Physics and Electrical Engineering Building
Pe.—Peele Hall
Pk.—Polk Hall
Pr.—Primrose
Pt.—Patterson
R.—Ricks
T.—Textile
Pl.—Pullen Hall
W.—Winston
Z.—Zoology Building

The courses appearing hereafter with numbers 100, 200, and the 300 courses, which are starred, may be taken for undergraduate credit only.

ANIMAL HUSBANDRY AND DAIRYING

A. H. s102. Animal Nutrition 1. Five credits, ten times a week. Prerequisite: Chem. 101. Mr. Ruffner. By arrangement. Pk. 110.

A study of animal nutrition, physiology of digestion; nutrients; feeding standards; economical and balanced rations. Practical work given.

A. H. s209. Horse and Mule Production. Three credits; lectures and laboratories; five times a week. Prerequisite: A. H. 101. Mr. Haig. By arrangement. Pk. 110.

A study of practical methods in production and management of horses and mules for work on farms under southern conditions. Special study of use of home-grown feeds for horses and mules at work or idle.

A. H. s217. Ice Cream Making. Four credits; lectures and laboratories. Prerequisite: A. H. 103. Mr. Clevenger. By arrangement. Pk. 110.

Standardizing of mixing and freezing of ice cream, sherbets, and other frozen products, and the physical principles involved; types of freezers, flavoring materials, fillers and binders; ice cream standards; the theory and practice of artificial refrigeration and its use in the ice cream plant.

A. H. s304. Herd Improvement. Five times a week; three credits. Prerequisite: A. H. 101, 102, 103. Mr. Haig. By arrangement. Pk. 110.

This course is designed for training students as supervisors of cow-testing associations in North Carolina. Rules and requirements for Advanced Registry Testing are studied in detail. Lectures are supplemented with laboratory work, and the student is required to do practical work in keeping feed costs, milk weights, butterfat tests necessary in the efficient management of dairy associations.

AGRONOMY

F. C. s1. Cotton Classing. Twenty hours a week for six weeks. No college credit. Mr. Darst, Mr. Cotner. 9-1 M. T. W. T. F. Pt. 45.

The Summer School of Cotton Classing offers an intensive course in the grading and stapling of cotton.

The course will consist of lectures and daily practice in grading and stapling cotton samples according to the "Universal Cotton Standards."

The course will be given each day, with the exception of Saturday, for four hours a day.

The first period of each day will be devoted to lectures and discussions, and the remaining time will be used in the actual practice of grading and stapling cotton.

All the instruction in classing will be done by men holding a Federal Cotton Classing license.

The Cotton Classing course is designed for a special group, and does not carry collegiate credit. There is a flat charge of $27.50 for the whole course in Cotton Classing. Persons registered for fifty per cent or less of the course will be charged $15.00. All fees are to be paid on or before registration.

A Cotton Classing certificate will be issued by the College to those satisfactorily completing the six weeks course.

The school has been serving the State and neighboring states for fourteen years. The school has international recognition, as men from the following countries have taken the course: South America, India, China, South Africa, Belgium and Germany.

Persons expecting to attend this course should notify Dr. J. B. Cotner, State College Station, Raleigh, N. C.

F. C. s225. Cotton Classing II. Three credits. Mr. Cotner. 9-11 or 11-1.

Required of sophomores in Textile Manufacturing, Chemistry and Dyeing, and Designing.

A study of the universal standards of American upland cotton for grade and staple. Factors that determine grade and their relative value. Practice will consist of classing and stapling three to five thousand samples of cotton.

F. C. s302. Advanced Cotton Classing. Three credits. Mr. Cotner. 9-11 or 11-1. Prerequisite: F. C. 101 or 105, 225, or 220.

For men who expect to become specialists in cotton classing. This course will prepare men to take the U. S. Civil Service examination for cotton classing.

F. C. s201. Cereal Crops. Prerequisite: General Field Crops. Five hours a week; three credits. Mr. Darst, Mr. Cotner. 11 M. W. F.; 11-1 T. Th. Pt. 26.

Lectures and recitations in history, production, cultivation, improvement, harvesting, storage, and marketing. Laboratory consists of structural studies, seed judging, variety identification, and commercial grading. Special problems in cereal production.

F. C. s210. Cotton Production, or s215. Tobacco Production. Five hours a week; three credits. Mr. Cotner. 8 M. T. W. T. F. Pt. 45.

Lectures and recitations on history, production, adaptation, types and varieties, including cultivation, harvesting, grading, and marketing, will be given. Laboratory consists of variety studies, the classing of cotton, and the grading of tobacco.

F. C. s330. Advanced Seed Judging and Grading. Prerequisite: Cereals. Five hours a week; three credits. Mr. Darst, Mr. Cotner. 12 M. W. F. 2-4 T. Th. Pt. 26.

Lectures and practice in planning, arranging and judging field crops exhibits. Study of the Federal grain and hay standards. A course planned to develop experts in the judging of field crop seeds and in the grading of grain and hays. A course designed for agricultural extension workers and vocational teachers.

F. C. s351. Advanced Study of Crops Research. Undergraduate credits, 3-9; Graduate credits, 2-6. Elective for graduates and advanced undergraduates. Mr. Darst, Mr. Cotner. By arrangement. Pt. 26.

A field study of the research work and demonstration work in crops. This course will be based directly upon experimental work in progress.

The crop or crops for study will be agreed upon by the class.

AGRICULTURAL ECONOMICS

Agr. Econ. s260. Agricultural Economics. Five hours a week; three credits. Mr. Knapp. 10 M. T. W. T. F. R. 208.

A study of the economics of agricultural production; the nature and characteristics of the factors of production; the laws relating to the combination of the factors; the factors affecting the choice of farm enterprises.

Agr. Econ. s265. Farm Marketing. Five hours a week; three credits. Prerequisite: Economics 102. Mr. Knapp. 9 M. T. W. T. F. R. 208.

A study of the economic principles underlying successful marketing of farm products, market organization and control, price-making forces, and critical examination of the present system of marketing farm products.

Agr. Econ. s269. Farm Accounting. Five hours a week; three credits. Mr. Knapp. 11 M. T. W. T. F. R. 208.

This course deals with the practical aspects of farm accounting, such as preparation of inventories of farm property, simple financial statements, method of keeping farm records, analysis of farm records, and the interpretation of results obtained from farm business transactions. Attention will also be given to methods of obtaining information on the business aspects of farming.

Agr. Econ. s363. Agricultural Cooperation. Five hours a week; three credits. Mr. Knapp. 8 M. T. W. T. F. R. 208.

A study of all types of farmers' cooperative enterprises. Specific consideration is given to local community cooperation, both economic and social, farmers' buying, selling and service organizations. A comparative study of all foreign and American farmers' cooperatives is made.

Agr. Econ. s365. National Economic Policies Affecting Agriculture. Five hours a week; three credits. Mr. Forster. By arrangement. Prerequisite: Econ. 103, Agr. Econ. 260, Agr. Econ. 265.

This course will center its discussion on the present Federal program of Agricultural Relief. Analysis will be made of different farm relief proposals for marketing and credit. Attention will be given to the ways in which vocational teachers, county agents and others may correlate their efforts with the Federal program.

BOTANY

Bot. s101. General Botany. Two lectures, two recitations, eight hours laboratory. Four credits. Mr. Whitford. 8, 2-4, M. T. W. T. Pt. 47.

Nature of the Higher Plant. A course presenting the fundamentals of the structure and function of the typical flowering plant.

Bot. s102. General Botany. Four credits. Mr. Whitford. 8, 2-4 M. T. W. T. Pt. 47.

Survey of the Plant Groups. An introduction to the various major kinds of plants through the study of the life histories of types.

Bot. s203. General Bacteriology. Four recitations, eight hours laboratory. Four credits. Mr. Shunk. Prerequisite: Botany 102 or equivalent. 11, 2-4, M. T. W. T. Pt. 47.

An introduction to the principles of bacteriology. Laboratory work on modern cultural methods of handling and studying bacteria.

Bot. s204. Systematic Botany. Two lectures, eight or sixteen hours laboratory. Three credits. Mr. Shunk. Prerequisite: Elementary Botany. 9, 2-5, T. Th. Pt. 47.

An introduction to the local flora and the classification of the plants included therein.

Courses For Graduates Only

Botany s401. Pathology of Special Crops. Three credits. Prerequisite: Bot. 201 or 203, 301. Mr. Lehman or Mr. Poole. By arrangement.

A comprehensive study of the etiology, symptoms, and control of specific diseases.

Botany s402. Bacteriology: Special Studies. Three credits. Prerequisite: Bot. 203, 302. Mr. Shunk. By arrangement.

Special work on restricted groups of bacteria such as nitrogen bacteria of the soil, milk organisms and special groups of bacteria in water.

Botany s406. Research in Botany. Three credits. By arrangement. Prerequisite: 30 hours 100-300 courses in Botany.

CHEMISTRY

Chem. s101. General Chemistry. Five hours in classroom and five hours in laboratory each week. Four credits. Equivalent to first term General Chemistry as given in the regular college year. Mr. Jordan. 8 M. T. W. T. F.; 1-5 T. W. 114.

Composition and properties of air and water. First principles of Chemistry, such as atomic theory, laws of chemical combination, valence, chemical formulas and equations, oxidation, reduction, behavior of gases and solutions. Study of a few typical elements, such as oxygen, hydrogen, carbon and nitrogen, together with their simpler compounds.

Chem. s103. General Chemistry. Five hours in classroom and five hours in laboratory each week. Four credits. Equivalent to second term General Chemistry as given in the regular college year. Mr. Jordan. 10 M. T. W. T. F.; 1-5 Th. W. 102.

Particular attention given to chlorine, sodium, nitrogen, sulfur, fluorine, bromine, and their compounds. Study of such common substances as salt, lye, soda, carbon disulfide, prussic acid, petroleum, coal tar, acetylene; ammonia and its more interesting uses such as in ice machines; sulfur dioxide in household refrigerators and as a bleaching and germicidal agent; compounds of nitrogen in warfare and agriculture. Introduction to acids, bases, salts, ionization, hydrolysis, equilibrium, the periodic law and the new theories of the structure of the atom.

Chem. s105. General Chemistry. Five hours in classroom and five hours in laboratory each week. Four credits. Equivalent to third term General Chemistry as given in the regular college year. Mr. Jordan. 11 M. T. W. T. F. Laboratory 1-5 T. W. 114.

Chemistry of clays, ceramics, glass, cement, soils, fertilizers, insecticides, lime, hard water alloys, paints, storage batteries, photography, flames and explosions. Compounds and properties of phosphorous, arsenic, bismuth, silicon, boron, potassium, calcium, magnesium, zinc, aluminum, iron, tin, lead, nickel, copper, mercury, silver, gold, platinum and other less common elements. Thermochemistry, colloids and radioactivity.

Chem. s111. Qualitative Analysis. Two hours lecture with four laboratory periods of three hours each, per week. Equivalent to one term of college work. Four hours credit. Prerequisite: General Chemistry. Mr. Williams. 10 T. Th.; Laboratory to be arranged. W. 102.

A systematic study and separation of the metallic ions and non-metallic ions into their respective groups, their identification and the chemical reactions involved. The last two weeks will be given over to the complete analysis of mixed salts, compounds, and alloys.

Chem. s112. Quantitative Analysis, A. Two lectures and twelve hours laboratory. Equivalent to one term of college work. Four hours credit. Prerequisite: Qualitative Analysis. Mr. Williams. Arrange. W. 102.

This work will deal with the theory and practice of making up and standardizing acids, bases, di-chromate and permanganate solutions, also the determination of the strength of unknown acids and bases, the analysis for the per cent purity of iron ores, oxalates, sulphates, magnesium phosphate rock, etc.

Chem. s113. Quantitative Analysis. Four credits. Mr. Williams. Required of sophomores in Chemical Engineering and those majoring in Chemistry. Prerequisite: Chem. 111. By arrangement. W. 217.

A continuation of Chem. 112. Substances of more difficult nature are analyzed, minerals, steel, alloys, limestone, Paris green, etc.

Chem. s141. Practical Organic and Biological Chemistry. Five hours a week; three credits. Prerequisite: Chem. 101, 103. Mr. Williams. To be arranged. W. 111.

A systematic study of hydrocarbons, alcohols, aldehydes, ketones, acids, ethers, esters, amino acids, and benzine derivatives, with entire emphasis on the substances in these groups which are related to plant and animal life processes. Special attention to carbohydrates, fats, proteins, and related compounds. Brief treatment of vitamins, alkaloids, plant colors, flavors, and other miscellaneous substances.

Chem. s344. Food, Nutrition and Diet. Five hours a week, three credits. Prerequisite: Training satisfactory to instructor. Mr. Williams. By arrangement. W. 115.

The influence of vitamins, minerals, proteins, amino acids, carbohydrates, fat, fiber, flavor, color, enzymes, preservatives and stimulants on the body. Chemical and physical nature of carbohydrates, fats and proteins. Digestion and metabolism. Study of the proper diet. Flesh-forming and flesh-producing diets. Diet in disease. Sour milk therapy.

While human feeding is emphasized in this course, principles here discussed are applicable to the feeding of animals as well.

Other courses in Chemistry offered during the regular school year may be taken by arrangement.

ECONOMICS

Econ. s102. Introduction to Economics. Five hours a week; three credits. Mr. Shulenberger. 8 M. T. W. T. F. Pe. 101.

This course is the regular college one-term course required of all students in Engineering and is designed for those students who do not feel able to devote more than one term to the study of economics, and also for teachers preparing to teach economics in high schools.

This is an elementary course in economics. It treats of the business aspects and economic organization of society. It includes a study of the great fundamental economic laws which apply to all professions and occupations; a study of the production, distribution and value of economic goods, and a study of the institutions, agencies, and ideals which dominate, operate and control the manner, means, and methods of making a living.

Econ. s103. General Economics. Five hours a week; three credits. Mr. Shulenberger. 11 M. T. W. T. F. Pe 101.

This is the first term of the regular college course in General Economics.

An introduction to the general field of economics. A study of economic institutions and the general principles governing the production and distribution of wealth under the existing economic organization.

Sections for F. W. S.

Econ. s112. Accounting for Engineers. Five hours a week; three credits. Mr. Shulenberger. 9 M. T. W. T. F. Pe. 109.

Required of students in the School of Engineering. Not open to students in Business Administration.

A survey of accounting and financial statements and records; their construction, their use and interpretation.

Econ. s201. Accounting I. Five hours a week; three credits. Mr. Shulenberger or Mr. Leager. 9 M. T. W. T. F. Pe. 3.

Required of all sophomores in Business Administration and Industrial Management.

A course in the theory and practice of accounting, covering the essential principles of accounting as applied to the several types of business organizations, giving interpretations of the structure, form, and uses of formal business statements such as Balance Sheets, Statements of Profit and Loss, etc.

Sections for F. W. S.

Econ. s210. Business Organization. Five hours a week; three credits. Prerequisite: Econ. 102 or 103. Mr. Leager. 8 M. T. W. T. F. Pe. 3.

Forms of business enterprises, single enterprises, partnerships, joint-stock company, corporation, and principles of business management.

Econ. s211. Business Law. Five hours a week; three credits. Prerequisite: Econ. 102 or 103. Mr. Shulenberger. 10 M. T. W. T. F. Pe. 109.

Required of seniors in Business Administration, and in Ceramic, Chem-

ical, Civil, Architectural, Electrical, and Mechanical Engineering, and teachers of commercial subjects. Elective for other students.

A general survey of the sources of law, fields of law, contracts, agency, sales, law of partnerships and corporation, negotiable instruments, bailments and carriers, personal property, suretyship and guaranty, bankruptcy, crimes in business.

Econ. s212a and 212b. Statistics (for teachers). Five hours a week; three credits. Elective. Prerequisite: Economics 102. Mr. Leager. 10 M. T. W. T. F. Pe. 3.

A study of the elements of statistical methods, collection and analysis of statistical data. This course stresses the application of statistical methods to educational data—graphical presentation, and analysis of teachers' problems.

Econ. s214. Business Statistics. Five hours a week; three credits. Mr. Leager. 9 M. T. W. T. F. Pe. 108.

A review of the history, and an analytical study of the outstanding business forecasting procedures and practices.

Econ. s217. Advertising. Five hours a week; three credits. Mr. Moen. 7 M. T. W. T. F. Pe. 108.

Principles and practices of advertising and its relation to the distribution and sales program.

Econ. s221a. Money. Five hours a week; three credits. Mr. Moen. By arrangement. Pe. 108.

History and theory of money and monetary systems.

Econ. s330. Principles of Insurance. Five hours a week; three credits. Prerequisite: Econ. 103 or equivalent. Mr. Leager. 11 M. T. W. T. F. Pe. 3.

A general course dealing with the various fields of insurance—life, fire, health, accident, credit, automobile, employees' liability and workman's compensation.

***Econ. s325. Stock Market Operations.** Five hours a week; three credits. Mr. Moen. 8 M. T. W. T. F. Pe. 108.

A description and analysis of the principles and practices of the organized exchanges. Investment securities.

ENGLISH

Eng. s101. Rhetoric and Composition. Five hours a week; three credits. Mr. Ladu. 8 M. T. W. T. F. Pu. 105.

Illustrative readings exercises in types of composition; long paper each term; collateral reading. Conferences.

Eng. s202. Advanced English Grammar. Five hours a week; three credits. Mr. Clark. 9 M. T. W. T. F. Pu. 108.

For teachers of English in high schools or in the grades, and for journalists and other creative writers. The science of grammar and the art of its application. The history of forms, inflections, and idioms where helpful in understanding present usage.

Eng. s221. Survey of American Literature. Five hours a week; three credits. Prerequisite: English 101. Mr. Ladu. 11 M. T. W. T. F. Pu. 105.

Equivalent to second term in regular session; from 1840 to 1900.

A study of the masterpieces and outstanding types of American literature in their historical settings, together with a critical examination of the development of American literary thought in connection with its European background.

Eng. s238. The Bible as Literature. Five times a week; three credits. Mr. Ladu. 9 M. T. W. T. F. Pu. 105.

Selected books of the Old and New Testament as literary and historical documents. (King James Version.)

***Eng. s330. Shakespeare.** Five times a week; three credits. Mr. Clark. 10 M. T. W. T. F. Pu. 108. Elective. Prerequisite: Eng. 101 and three additional credits in English.

An analysis of principal plays. Reports on parallel readings.

***Eng. s332. The Romantic Period.** Five times a week; three credits. Mr. Clark. 11 M. T. W. T. F. Pu. 108. Elective. Prerequisite: English 101 and three additional credits in English.

Representative poems of Gray, Blake, Burns, Wordsworth, Coleridge, Scott, Southey, Byron, Shelley, and Keats.

***Eng. s335. Milton.** Five times a week; three credits. Mr. Clark. 8 M. T. W. T. F. Pu. 108. Elective. Prerequisite: English 101 and English 220 or its equivalent.

Major and minor poems, with limited treatment of prose.

***Eng. s337. Contemporary American Literature.** Five times a week; three credits. Mr. Ladu. 10 M. T. W. T. F. Pu. 105. Prerequisite: English 101 and three additional credits in English.

Study of leading writers of present century, and an attempt to interpret works against social background of period.

EDUCATION

Courses for Undergraduates

Ed. s203a. Educational Psychology. Five hours a week; three credits. Required of students in Education; elective for others. Mr. Garrison. 8 M. T. W. T. F. H. 3.

Original nature and environment are analyzed in this course as to their function in the educational processes. The elementary principles of psychology are illustrated and studied as they relate to the learning process.

Ed. s203b. Educational Psychology. Five hours a week; three credits. Required of students in Education; elective for others. Mr. Garrison. 10 M. T. W. T. F. H. 3.

This part of educational psychology is concerned with the physical and mental development of high school boys and girls. Social development; character development; emotional development and control; religious and moral development; and, mental hygiene are topics given special consideration.

Note to Teachers of Industrial Arts:

Especially for industrial arts teachers, courses will be offered in woodworking, metal work, electrical work, auto-mechanics and mechanical drawing. The instructors will be men of wide experience helpful to teachers of general shop and unit courses.

Ed. s250. Mechanical Drawing for Teachers. Ten hours a week; three credits. Mr. Foster. By arrangement. P. 6.

Lectures and drawing room practice involving problems of junior and senior high school mechanical drawing. Lettering, instrument practice, projections, intersections, developments, tracing, and blue-printing.

***Ed. s303. Extra-Curricular Activities in the Secondary School.** Five hours a week; three credits. Prerequisite: Junior standing or teaching experience. Mr. Showalter. 10 M. T. W. T. F. Pe. 208.

The home room; pupil participation in government, the assembly; clubs; publications; recreational activities; athletics; honor societies; social organizations; financial support.

***Ed. s305. Methods of Study.** Five hours a week; three credits. Mr. Cook. Prerequisite: Twelve credits in Education. By arrangement. Pe. 201.

Ed. s320. Vocational Guidance. Five hours a week; three credits. Mr. Boshart. Prerequisite: Twelve credits in Education. 9 M. T. W. T. F. H. 16.

Treats of the problems of directing pupils in the study of occupations for the purpose of selecting satisfactory life work. It includes studies of the history of occupational guidance and personnel administration, principles and practices in guidance and employment, compulsory school laws, child labor legislation, and forms and records essential for school use.

***Ed. s330. Visual Instruction.** Five hours a week; three credits. Prerequisite: Twelve credits in Education. Mr. Armstrong. 9 M. T. W. T. F. Pe. 201.

An advanced course in the psychology, methods, and technique of visual instruction; its place and limits, evaluation and expense of various aids, aids available. Practice in the making and use of practical visual aids.

***Ed. s331. Visual Aids in Social Sciences.** Five hours a week; three credits. Prerequisite: Ed. 208 or Ed. 330 and nine other credits in Education. Mr. Armstrong. 8 M. T. W. T. F. Pe. 201.

A detailed study of visual materials, devices, and procedures applicable to teaching the social sciences, including geography. Emphasis will be given to motivation, facilitating the learning process, and fixation. Various devices will be used by the class.

***Ed. s334. High School Course of Study.** Five hours a week. Three credits. Mr. Highsmith. 12 M. T. W. T. F. Pe. 206.

A program of Course of Study building will be carried on in the State for the next two years and this course, Ed. s334, is given as a part of this statewide enterprise.

The course will include the following:

1. A brief study of the aims or objectives of secondary education.
2. Setting up attainments or achievements for students in each of the

major subjects taught in each year of the high school—English, Mathematics, Science, Language, History.

3. Actual and practical work on certain subjects determined by the interests and information of the members of the group.

*Ed. s335. **Public School Administration.** Five hours a week; three credits. This course is intended primarily for superintendents and principals. Prerequisite: Twelve credits in Education. Mr. Highsmith. 9 M. T. W. T. F. Pe. 208.

The following problems will receive consideration:

The powers and duties of the board of education; the powers and duties of the superintendent; the county-wide plan; consolidation of schools; transportation of pupils; school buildings and equipment; operation and maintenance of plant; janitor service; selection, purchase and distribution of supplies; school reports; problems pertaining to the teacher, pupil and home; educational problems of a county school system. Textbooks, lectures, readings and reports.

*Ed. s336. **Problems in Secondary Education.** Five hours a week; three credits. Prerequisite: Twelve credits in Education. Mr. Highsmith. 11 M. T. W. T. F. Pe. 206.

The purpose of this course is to give as practical assistance as possible to those men and women who wish to become or are now serving as high school principals in North Carolina. The following problems will be discussed:

Aims of secondary education; the curriculum (with special reference to the North Carolina course of study) standards for high schools; classification of pupils; control of pupils; attendance; guidance of pupils; classroom standards; tests and examinations; marking system; directed study; class schedule making; duties of principals; supervision of instruction; selection of teachers; teaching load; salaries; textbooks, lectures, readings and reports.

*Ed. s337. **The Teaching of Geography.** Five hours a week; three credits. Required for a certificate in science. Elective for teachers in the elementary and secondary school. Prerequisite: junior standing or teaching experience. Mr. Showalter. 9 M. T. W. T. F. Pe. 208.

Trends in geography teaching; nature and use of curriculum materials; practices in teaching geography; the place of geography in general education.

*Ed. s339. **The Teaching of Science in the Secondary School.** Five hours a week; three credits. Required for a certificate in science. Prerequisite: junior standing or teaching experience. Mr. Showalter. 8 M. T. W. T. F. Pe. 208.

Determining influences in the development of science teaching; nature and use of curriculum materials; practices in teaching science; educational values and objectives; a program for teaching science.

*Ed. s341. **The Teaching of High School Mathematics.** Ten hours a week; five credits. Prerequisite: Ed. 101, 203, 212, 213 and 20 credits in Mathematics. Mr. Mumford. 11-1 M. T. W. T. F. P. 101B.

A comprehensive view of the materials of high school mathematics will be accompanied by a discussion of the selection and use of textbooks and supplementary helps. Practice will be given in the construction and use of written examinations, and the comparative merits of standard tests will be

considered. Attention will be given to adapting both the content and the methods of procedure to the needs of various groups.

Ed. s353. Theory of Industrial Arts in the Elementary School. Five hours a week; three credits. Prerequisite: Twelve credits in Education. Mr. Boshart. 8 M. T. W. T. F. H. 16.

A study of the value and place of industrial arts in the elementary school. The correlation of industrial arts with other school subjects; the methods of teaching and supervision, and the study of industries, with the view of selecting suitable projects for classroom use. Primarily for teachers and supervisors of the elementary schools.

Ed. s354. Practical Arts Problems. Ten hours a week; three credits. Prerequisite: Twelve credits in Education. Mr. Boshart. 9-11 M. T. W. T. F. or 11-1 M. T. W. T. F. H. 15.

Treats of the selection and organization of suitable projects in industrial arts and the working out in detail of such as will meet the needs of the class. The meaning of industrial arts and the methods of making it a part of the regular work of the school will be discussed. For teachers in the elementary schools who have had teaching experience and who have not had special work in industrial arts. A small fee for supplies.

Ed. s355. Art Studies in the Elementary School. Five or ten hours a week; one and one-half or three credits. Prerequisite: Twelve credits in Education. Mr. Boshart. 9-11 M. T. W. T. F. H. 15.

Intended to aid teachers in illustrating their problems through the use of water color, crayon, clay, poster work, etching, and designing. A small fee for supplies.

Ed. s360. Special Problems in Teaching Agriculture. Five hours a week; three credits. Prerequisite: Twelve credits in Education, including Special Methods of Teaching Agriculture. Mr. Cook. 9 M. T. W. T. F. Pe. 201.

This course is for graduates of the Department of Agricultural Education. It will consist of special individual problems and preparation of plans for the next year's work, involving a survey of the school and community in which they are to work the coming year. From this information each student will prepare a program of agricultural education especially adapted to his school and community. It will include classroom arrangements and fixtures, library equipment, gathering specimens and illustrative materials, and the organization of courses of study.

***Ed. s364. History of Education.** Five times a week; three credits. Mrs. Wallace. 9 M. T. W. T. F. Pu. 8.

This course will include a brief study of European education and its influence upon the American public school, the early development of the elementary and high schools of America, and the present tendencies of our educational system. The period from 1890 to the present will be given special consideration.

Ed. s377. Psychology of Secondary School Education. Three credits. Mr. Garrison. Prerequisite: Ed. 203 or 371 and 6 credits in Education.

The psychology of learning applied to secondary education; the educational growth of high school pupils.

*Ed. s381. **Character Education.** Five hours a week; three credits. Prerequisite: Twelve credits in Education. Mr. Cook. 11 M. T. W. T. F. Pe. 201.

A study of the needs for character training, the nature of the problem, present development, difficulties, agencies responsible, results of investigations, materials and methods for teachers.

*Ed. s382. **Supervision—The Improvement of Instruction.** Five hours a week; three credits. Prerequisite:: Eighteen hours in Education. Open to college graduates only. Mr. Highsmith. 10 M. T. W. T. F. Pe. 206.

For principals of high schools, heads of departments, supervisors and teachers.

The problems involved in the supervision of teachers; the planning and organization of supervision; the functions of supervision; rating of principals, supervisors, and teachers; classroom visitation and conferences; the improvement of teachers in the service.

Textbooks, lectures, readings, and reports.

Ed. s412. Occupational Counseling. Five hours a week; three credits. Prerequisite: Ed. 320, 327. Mr. Boshart. 8 M. T. W. T. F. H. 16.

Special attention is given to counseling as it may be applied in the junior and senior high schools, colleges, or placement offices, and the method of conducting individual interviews and group conferences. Information covering occupational material will be organized, evaluated, and applied to specific case studies. For teachers of experience and those familiar with personnel work.

Ed. s416. Problems in Agricultural Teaching. Five hours a week; three credits. Prerequisite: Ed. 203, 307, and at least 12 other credits in Education and Agriculture. Experience in agricultural teaching will be accepted in lieu of Ed. 307. Mr. Cook. By arrangement. Pe. 201.

Investigations, reports, and a critical evaluation of present practices with constructive remedies. The content of the course will depend on the interests and needs of the individual members of the class.

Ed. s421. Research in Education. Staff.

ENGINEERING

M. E. s102. Engineering Drawing. Ten or twenty hours a week; three or six credits. Required of Engineering freshmen. Mr. Foster. 9-1 M. T. W. T. F.; 10-12 M. T. W. T. F. P. 106.

Drawing-board work, covering lettering, orthographic projection, auxiliary projection, isometric projection, cabinet projection, intersection and development, working drawings, and blue-printing.

M. E. s103. Descriptive Geometry. Ten hours a week; three credits. Mr. Foster. 8-10 M. T. W. T. F. P. 106.

This work covers the representation of geometrical magnitudes, by means of points, lines, planes, and solids, and the solution of problems relating to them.

M. E. s107. Mechanical Drawing. Four, seven or ten hours per week; one, two or three credits. Mr. Foster. By arrangement. P. 106.

Drawing-board work, covering machine fastenings, pipe fittings, elementary cams, technical sketching, working drawings, tracing and blue-printing.

C. E. s200. Mechanics. Five, ten, or fifteen hours per week; three, six, or nine credits. Mr. Foster. By arrangement. P. 102. Required of Engineering juniors. Prerequisite: Math. 203.

Either the first, second, third, or a combination of two, or all three terms may be taken. First term covers statics, concurrent, non-concurrent and parallel forces, friction, centroids, and moment of inertia. Second term covers kinetics, rectilinear and curvilinear, motion and rotation. Third term covers work, power, and energy.

M. E. s203. Kinematics. Ten hours a week; three credits. Prerequisite: M. E. 103 and M. E. 107. Mr. Foster. To be arranged. P. 102.

Drawing-board work, covering the forms and motions of machines.

GEOLOGY AND PHYSICAL GEOGRAPHY

Geol. s101. Earth History. Five hours a week; three credits. Mr. Stuckey. 9 M. T. W. T. F. Pr.

Open to both college students and teachers who are interested in a better understanding of the world about them.

An introductory course in general geology dealing with the changes which have taken place in the earth and the physical and life processes which have brought about these changes. The first half of the course deals with the processes of physical and dynamical forces while the second half deals with the historical development of the earth as it has been affected by those forces and by life processes.

Geol. s105. Physical Geography. Three lectures; four hours laboratory and field work; three credits. Equivalent to the regular course in physical geography given in the third term of the college year. Mr. Stuckey. 10 M. T. W. T. F. Pr.

The course is intended to give those interested in general science and in teaching a better appreciation of physical geography. It will include an account of the earth as a planet; the atmosphere; the development of winds and rain; changes in the earth's crust; and the development of relief features and physiographic provinces.

The work of running water, ground water, wind, snow and ice, and forces within the earth as they affect the relief features will be taken up in some detail.

The course will also include a brief consideration of the physical geography of North Carolina.

Geol. s291. Geology of North Carolina. Three lectures; four hours laboratory; three credits. Mr. Stuckey. 12 M. W. F. Laboratory by arrangement. Pr.

Elective for students in the Schools of Engineering and Science and Business who have had Geol. 101 or 120.

Also open to teachers who are interested in the geology of North Carolina and who may be interested in helping students to collect and assemble groups of the common rocks and minerals from different sections of the State.

The course will cover the physical geography, general geology, common rocks and minerals, and mine and quarry products of the State.

Hist. s101a. American Economic History. Five hours a week; three credits. Mr. _____ 8 M. T. W. T. F. Pu. 6.

Discovery, colonization, economic background of the Revolution, government foundations, wars, presidential administrations, public lands, public finance, agriculture and industry.

Hist. s101c. Commercial Geography (Commercial and Industrial). Five hours a week; three credits. Mr._____ 11 M. T. W. T. F. Pe. 109.

This course is designed to prepare teachers of geography in the high schools as provided for in the plan of High School Reorganization as well as for students in the School of Science and Business. Geographical conditions affecting industries, production and commerce of the world; development and relations of commercial areas to location and availability of resources; markets and transportation routes.

Hist. s201b. Modern European History. Five hours a week; three credits. Mr. _____ 10 M. T. W. T. F. Pu. 8.

The political and social history of Europe from 1789 to 1870. A survey of the French Revolution and Napoleon; the era of Metternich; democratic reforms and revolution; the Industrial Revolution; and the growth of nationalism in 1870.

Hist. s201c. Contemporary Europe. Five hours a week; three credits. Mr. Barnhardt. 9 M. T. W. T. F. Pu. 6.

This course deals with the economic, social, and political developments in Europe from 1870 to the present time. Special emphasis is laid upon the causes of the World War. The war is studied in outline and attention is given to post-war conditions.

Hist. s209. American Government. Five hours a week; three credits. Mr. Barnhardt. 10 M. T. W. T. F. Pu. 6.

This course gives a survey of the historical development, the constitution, the organization, powers, and the actual operations of our national government. Special emphasis is given to present day conditions and movements in our government and political life.

***Hist. s302. Recent U. S. History.** Five hours a week; three credits. Prerequisite: History 101. Mr. Barnhardt. 8 M. T. W. T. F. Pu. 6.

The Civil War, reconstruction, development of West and South, transportation, rise of big business and organized labor, political parties, movements for reform, the free silver movement, war with Spain, American expansion, rise of the Progressive Party; the World War and problems of Reconstruction, Roosevelt and the New Deal.

***Hist. s303. History of North Carolina.** Five hours a week; three credits. Prerequisite: History 101. Mr. Barnhardt. 11 M. T. W. T. F. Pu. 6.

The purpose of this course is to give the teachers of North Carolina and others a general view of the political, economic, and social development of North Carolina from colonial beginnings to the present day. A brief survey will be made of the settlement of North Carolina, the various racial groups

which colonized, agriculture, industry, and commerce in the colonial era, and the relations of the province of England. A more detailed study will be made of North Carolina between the Revolution and the Civil War, emphasis being given to North Carolina and states' rights, social conditions, slavery and the free Negro, agriculture and industry, and the beginnings of public school education. Particular emphasis will be placed on the recent development of the State, the rise of textile, tobacco, and other industries, the development of agriculture, public schools and higher education, good roads, and other factors in recent North Carolina progress.

HORTICULTURE

Horticulture s209. Vegetable Production. Three credits. Mr. Randall. By arrangement. Pk. 308.

Location, soil preparation, fertilization, irrigation, and general culture applicable to commercial vegetable production.

Horticulture s228. Home Floriculture. Three credits. Mr. Randall. By arrangement. Pk. 308.

Principles and methods of growing garden flowers and house plants, including varieties and their adaptability.

There will be the equivalent of two lectures and one two-hour laboratory for each of the above courses.

MATHEMATICS

Math. s100. Mathematical Analysis. Five hours a week; three credits. Prerequisite: Algebra to quadratics and Plane Geometry. Mr. Mock. 10-11 M. T. W. T. F. P. 101A.

The course treats of Algebra, Trigonometry, and Analytical Geometry. It emphasizes graphical methods in the solutions of equations.

Math. s101. Algebra. Ten hours a week; five credits. Prerequisite: Algebra to quadratics and Plane Geometry. Mr. Mumford. 11-1 M. T. W. T. F. P. 101B.

This course includes the progressions, binomial theorem, undetermined coefficients, logarithms, compound interest and annuities, permutations, combinations, the general theory of equations, the solution of higher equations, etc.

Math. s103. Plane Trigonometry. Ten hours a week; five credits. Prerequisite: Algebra through quadratics and Plane Geometry. Mr. Fisher. 8-10 M. T. W. T. F. P. 209.

Definitions of the trigonometric functions, derivation of formulæ, solutions of plane triangles, solutions of many practical problems, etc.

Math. s104. Analytical Geometry. Ten hours a week; five credits. Prerequisite: Mathematics 101, 103. Mr. Mumford. 8-10 M. T. W. T. F. P. 101B.

Loci of equations, the straight line, circle, parabola, ellipse, hyperbole, and the general equation of the second degree.

Math. s201. Differential Calculus. Ten hours a week. Five credits. Prerequisite: Mathematics 104. Mr. Mock. 8-10 M. T. W. T. F. P. 203.

An elementary course on the fundamental principles of the Calculus, including the development of the formulæ for differentiation with their applications to the problems in rates, maxima and minima, etc.

Math. s202. Integral Calculus. Ten hours a week; five credits. Prerequisite: Mathematics 201. Mr. Fisher. 11-1 M. T. W. T. F. P. 209.

Development of formulæ for integration and their application to definite integrals, areas under curves, lengths of curves, volumes of solids, centers of gravity, centers of pressure, and moments of inertia.

*Math. s341. See Ed. s341 for description.

[1]MODERN LANGUAGES

French

Mod. L. s104. French Prose. Five hours a week; three credits. Mr. Hinkle. 8 M. T. W. T. F. Pe. 212.

This course consists of readings and translations based upon selections from representative modern French authors. Rapid reading and sight translation are stressed.

***Mod. L. s313. French Prose Masterpieces.** Five hours a week; three credits. Mr. Hinkle. 9 M. T. W. T. F. Pe. 212.

This is a reading translation course developing facility in French for purposes of investigation. The class work is supplemented by lectures and reports in such a way as to give a general survey of French literature.

German

Mod. L. s102. Elementary German. Five hours a week; three credits. Mr. Hinkle. 10 M. T. W. T. F. Pe. 212.

This course is intended for students who have had little or no previous training in German as well as those who may wish to review the elements of German grammar and pronunciation. It consists of reading and translation with the elements of grammar. Practice in the pronunciation and understanding of German is given by means of dictation and oral practice.

Mod. L. s105. German Prose. Five hours a week; three credits. Mr. Hinkle. 10 M. T. W. T. F. Pe. 212.

Grammar, composition, and translation continued. Rapid reading and sight translation stressed. General survey of German literature is made. Selections from modern German classics are studied in class.

***Mod. L. s304. Scientific German.** Five hours a week; three credits. Mr. Hinkle. 10 M. T. W. T. F. Pe. 212.

This is a reading translation course in scientific German literature. A great deal of attention is given to the study and analysis of German scientific constructions, and a basis is laid for the development of a scientific vocabulary. Open to students who have had two years high school German or one year of college German.

Spanish

Mod. L. s103. Elementary Spanish. Five hours a week; three credits. Mr._____. 11 M. T. W. T. F. Pe. 212.

This course is intended for students who have had little or no previous training in Spanish. It consists of reading and translation with the elements

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[1]NOTE. Courses in this department may be taken for double credit with the consent of the teacher concerned and the approval of the Director of the Summer School.

The courses in French and Spanish are given alternately.

Students wishing graduate credit in languages should consult the Head of the Department of Modern Languages before registering.

of grammar. Practice in the pronunciation and the understanding of Spanish is given by means of dictation and oral practice.

Mod. L. s106. Spanish Prose. Five hours a week; three credits. Mr. _____. 12 M. T. W. T. F. Pe. 212.

This course consists of readings and translation based upon representative Spanish authors. Reading and sight translations are stressed. The class work is supplemented by lectures and reports in such a way as to give a general survey of Spanish literature.

PHYSICS

Physics s110. General Physics and Physics for Textile Students. Four or eight credits. Five hours class work, one 2½ hours laboratory each week for four credits. Double this for eight credits. Mr. Heck. 9 M. T. W. T. F. 2-4 Tu.; 9-11 M. T. W. T. F.; 2-4 T. T. P. & E. 113.

A course covering the whole field in condensed form. It is especially designed for high school teachers, containing method as well as subject matter. The materials discussed give a broad background of additional subject matter with which to supplement a like course given in high school. It is given in halves taken simultaneously. At nine, force and machines, heat and weather, sound and the physics of music are given. At ten, light and the general field of electricity and the electrical nature of matter are given. Either half may be taken and four college credits earned, substituting for the corresponding term of Physics 101. Two afternoons of laboratory accompany each half.

Physics s104. Five or ten credits. Mr. Dixon. 8 M. T. W. T. F.; 2-4 M. W.; 8-10 M. T. W. T. F.; 2-4 M. T. W. T. F. P. & E. 212.

An advanced treatment of General Physics. First, second, or third terms work may be taken or any two terms taken simultaneously.

Graduate courses in physics will be given if there is sufficient demand.

Physics s107. Descriptive Astronomy. Five hours a week; three credits. Mr. Heck. 12 M. T. W. T. F. P. & E. 212.

A descriptive course covering the most interesting elements in the study of the sun and planets and the stars. The modern interpretation of the universe as a whole given in this course makes it valuable as a background to a student or teacher of any subject. Observation periods, using the telescope on top of the physics building, will be substituted at times for class lectures.

Physics s411. Research.

PHYSICAL EDUCATION

NOTE.—Summer School students are very desirous of getting in coaching courses but find it difficult to schedule them in addition to other required subjects. The coaching courses of the regular term have been combined, to make it possible for students to get instruction in all the major sports if they so desire. These classes meet daily, each sport covering one-half the summer term.

P. E. s112. Theory and Practice Football Coaching. Three hours theory, one hour practice; two credits. Mr. Miller. By arrangement. Gym.

This course will cover the equipment, schedule making, rules, individual position play, offensive and defensive team play, individual technique, team strategy, training and conditioning.

P. E. s113. Theory and Practice Basketball Coaching. Three hours theory, one hour practice; two credits. Mr. Miller. By arrangement. Gym.

This course will cover the equipment, schedule making, rules, individual technique, offensive systems, defensive systems, training and conditioning.

P. E. s114-115. Theory and Practice Track and Baseball Coaching. Five hours theory, one hour practice; three credits. Mr. Miller. By arrangement. Gym.

Track will be covered the first half of the term. The equipment, rules, individual technique, practice organization, administration of meets will be thoroughly discussed and opportunity given for practical demonstration. Baseball will be covered the last half of the term covering individual technique in all fundamentals of individual play, offensive and defensive baseball.

P. E. s117. Physical Education and Recreational Programs. Five hours theory, one hour practice; three credits. Mr. Miller. By arrangement. Gym.

This course is designed to aid those teaching in smaller high schools and grades to meet the demand made of them in assisting in the physical education programs of their school. Both the formal work consisting of calisthenic drill, marching, dancing, and apparatus work and the informal work consisting of group games, sports and efficiency tests will be covered. The organization and the administration of the class work will be stressed. Mr. Miller will teach the men's section in this course and Miss Crow will teach the women's section.

POULTRY SCIENCE

Poul. s303. Poultry Nutrition. Three credits. Mr. Williams or Mr. Dearstyne. By arrangement. R. 208.

This course covers the fundamentals of poultry feeding, physiology of digestion, utilization of home grown feeds, finishing of capons and broilers.

Poul. s305. Poultry Diseases. Three credits. Mr. Gauger or Mr. Dearstyne. By arrangement. R. 208.

A study of the diseases of poultry and of parasitic infestations; sanitation in relation to disease prevention; special stress on autopsy work.

Poul. s306. Commercial Poultry Plant Management. Three credits. Mr Williams. By arrangement. R. 208.

Principles of successful commercial plant management: operation of force draft incubator; feeding; culling and marketing of poultry.

SOCIOLOGY

Soc. s102. Introductory Sociology. Five hours a week; three credits. Mr. Winston. 11 M. T. W. T. F. Pu. 8.

This course offers an inductive introduction to the field of sociology by taking up a number of social problems which are already somewhat familiar

to every one. These problems confront every community and our general citizenry. The outstanding problems to be considered are: poverty, crime, divorce, immigration, population and race problems. This course, therefore, is a natural introduction to the sociology courses, which deal more directly with social theory.

Soc. s103. General Sociology. (1st term.) Five hours a week; three credits. Mr. Winston. 10 M. T. W. T. F. Pe. 108.

The course deals first with the basic principles of sociology, then analyzes society and its influence on human behavior.

***Soc. s302. Sociology of City Life.** Five hours a week; three credits. Prerequisite: Soc. 103 and three additional term credits of Sociology. Mr. Winston. 8 M. T. W. T. F. Pe. 108.

Problems arising from growth of modern town and city; city planning in regard to social and industrial progress.

***Soc. s306. The American Family.** Five hours a week; three credits. Prerequisite: Soc. 103 and three additional term credits in Sociology. Mr. Winston. 9 M. T. W. T. F. Pe. 108.

A study of family relationships, of the relationship between husband and wife, parents and children, with particular emphasis on the development of personality. The effect of present-day social changes upon the family and the changes in family life as a result will be studied. Discussion of various efforts to stabilize the family. The part habits play in successful and non-successful marriages will also be discussed.

SOILS

Soils s220a. Soil Geography of the United States. Five periods a week; three credits. Mr. Clevenger. 8 M. T. W. T. F. Pt. 16.

A course dealing with the characteristics and distribution of the soil groups of the United States and their influence on the agricultural, grazing and forest industries of the country.

Soils s310. Fertilizers. Four hours of class and one laboratory period a week; three credits. Mr. Clevenger. 10 M. T. W. T. Laboratory to be arranged. Pt. 16.

A study of the sources, characteristics and utilization of fertilizers.

Soils s315. Soils of North Carolina. Four hours of class, one laboratory period a week; three credits. Mr. Clevenger. 11 M. T. W. T. Laboratory to be arranged.

A study of the origin, characteristics, distribution and utilization of North Carolina soil types.

TEXTILES

Tex. s107. Power Weaving. Two credits. Mr. Nelson. By arrangement. Textile Building.

Construction of auxiliary motions on plain looms. Cams and their construction. Drop-box loom construction. Methods of pattern chain building. Construction and value of pattern multipliers. Timing of drop-box motion, and other studies.

Tex. s108. Power Weaving Laboratory. One or two credits. Mr. Hart. By arrangement. Textile Building.

Operation and fixing of plain, automatic and drop-box looms. Pattern chain building for drop-box looms.

Tex. s115. Textiles for Teachers. Five hours a week; three credits. Mr. Nelson. 8 M. T. W. T. F. Textile Building.

This course is designed to give a fundamental knowledge of fabrics. It will include a study of various fabrics and their selection and adaptability to different uses. Various methods of distinguishing fabrics made from different materials such as cotton and rayon, cotton and wool, wool and silk, and other combination of yarns will be given and analysis made of the fabrics. In addition, a general survey of the various processes through which cotton passes in its transition from the raw material to the finished product will be studied.

Tex. s205. Fabric Design and Analysis I. Three or six credits. Mr. Hart. By arrangement. Textile Building.

Construction of fancy weaves, such as broken twills, curved twills, entwining twills, granite weaves. Imitation leno; honeycomb weaves; fabrics backed with warp or filling; fabrics ornamented with extra warp or filling; combining weaves together to produce new patterns.

Analyzing samples of fancy fabrics for design, drawing in draft, reed, and chain plan. Calculating particulars to reproduce fabric from data obtained from sample.

Tex. s207. Dobby Weaving. Three credits. Mr. Nelson. By arrangement. Textile Building.

Methods of drawing in and starting up cotton and rayon warps. Setting of harness shafts. Selection of springs or spring jacks. Construction and methods of fixing single and double index dobbies. Methods of pattern-chain building.

Tex. s208 or s209. Dobby Weaving Laboratory I or II. One, two, three, or six credits. Mr. Hart. By arrangement. Textile Building.

Preparation of warps for weaving cotton and rayon fabrics on dobby looms; starting up warps in looms; fixing single and double index dobbies; pattern chain building; operation of dobby looms.

Tex. s404. Textile Fabrics: Their Qualities and Uses. Three credits. Mr. Nelson. By arrangement. Textile Building.

Analyses and illustrations of standard, fancy, and novelty fabrics. Determination of fabric content. Construction of fabrics. Determination of quality in fabrics. Common defects in fabrics, and their causes. Methods of testing fabrics for strength, elongation, and durability.

ZOOLOGY

Zool. s101. General Zoology. Five recitations, four hours laboratory. Four credits. Mr. Mitchell. 9 M. T. W. T. F. Lab. arranged. Z. 7.

A study of the structures and functions of the vertebrates with special reference to man and the rat.

Zool. s102. General Zoology. Five recitations, four hours laboratory. Four credits. Mr. Bostian. 10 M. T. W. T. F. Lab. arranged. Z. 8.

A review of the groups of animals with special reference to those of economic importance.

Zool. s103. Human Physiology. Five recitations, four hours laboratory. Three credits. Mr. Bostian. 8 M. W. F. Lab. arranged. Z. 8.

A study of the functions of the human body, designed especially for teachers.

Zool. s204. Economic Entomology. Five recitations, four hours laboratory. Four credits. Mr. Mitchell. 8 M. W. F. Lab. arranged. Z. 7.

A general study of the insects, including their economic importance, with emphasis upon control of the more important local species.

Zool. s220. Animal Nature Study. Five recitations, four hours laboratory. Three credits. Mr. Metcalf. 9 M. W. F. Lab. arranged. Z. 201.

A study of the common birds, animals and insects with special reference to presenting this material for grade school teachers.

Courses for Graduates Only

Zool. s401. Systematic Entomology. 3 credits. Mr. Metcalf, Mr. Mitchell. By arrangement. Prerequisite: Zool. 307 or equivalent.

A thorough discussion of codes of nomenclature, methods of writing descriptions, constructing keys, determining priority, selecting and preserving types, and making bibliographies and indexes. The student may select some special group of insects for detailed study.

Zool. s403. Research in Zoology. Three credits. Mr. Metcalf, Mr. Mitchell, Mr. Bostian. By arrangement. Prerequisite: Eighteen term credits in Zoology.

The student will be assigned a problem in development morphology, ecology, physiology, genetics or taxonomy.

SCHEDULE FOR SUMMER SCHOOL, 1934

Name of Course	Number	Teacher	Hours per week		Time of Recitation		Room
			Clock	Credit	Hours	Days	
ANIMAL HUSBANDRY AND DAIRYING							
Animal Nutrition I	A. H. s102	Ruffner	10	5	By arran	gement	Pk. 110
Horse and Mule Produc	A. H. s209	Haig	5	3	By arran	gement	Pk. 110
Ice Cream Making	A. H. s217	Clevenger	6	4	By arran	gement	Pk. 110
Herd Improvement	A. H. s304	Haig	5	3	By arran	gement	Pk. 110
AGRONOMY							
Cotton Classing	F. C. s1	Darst, Cotner	20	None	9-1	M.T.W.T.F.	Pt. 45
Cotton Classing II	F. C. s225	Cotner	10	3	9-11 or	M.T.W.T.F.	
					11-1	M.T.W.T.F.	Pt. 45
Adv. Cotton Classing	F. C. s302	Cotner	10	3	9-11 or	M.T.W.T.F.	
					11-1	M.T.W.T.F.	Pt. 45
Cereal Crops	F. C. s201	Darst, Cotner	5	3	11	M.W.F.	Pt. 28
					11-1	T.Th.	Pt. 26
Cotton Production, or	F. C. s210						
Tobacco Production	F. C. s215	Cotner	5	3	8	M.T.W.T.F.	Pt. 45
Adv. Seed Judg. & Grad	F. C. s330	Darst, Cotner	5	3	12	M.W.F.	
					2-4	T.Th.	Pt. 26
Adv. Study of Crops Res	F. C. s351	Darst, Cotner		3-9 or 2-6	By arran	gement	Pt. 26
AGRICULTURAL ECONOMICS							
Agricultural Economics	Ag. Ec. s260	Knapp	5	3	10	M.T.W.T.F.	R. 208
Farm Marketing	Ag. Ec. s265	Knapp	5	3	9	M.T.W.T.F.	R. 208
Farm Accounting	Ag. Ec. s269	Knapp	5	3	11	M.T.W.T.F.	R. 208
Agricultural Cooperation	Ag. Ec. s363	Knapp	5	3	8	M.T.W.T.F.	R. 208
National Econ. Policies Affecting Agriculture	Ag. Ec. s365	Forster	5	3	By arran	gement	R. 207
BOTANY							
General Botany	Bot. s101	Whitford	12	4	8, 2-4	M.T.W.T.	Pt. 47
General Botany	Bot. s102	Whitford	12	4	8, 2-4	M.T.W.T.	Pt. 47
General Bacteriology	Bot. s203	Shunk	12	4	11, 2-4	M.T.W.T.	Pt. 47
Systematic Botany	Bot. s204	Shunk	8	3	9, 2-5	T.Th.	Pt. 47
Pathology of Spec. Crops	Bot. s401	Lehman, Poole	10	3	By arran	gement	Pt. 49
Bacteriology: Spec. Stud	Bot. s402	Shunk	10	3	By arran	gement	Pt. 38
Research in Botany	Bot. s106	Shunk	10	3	By arran	gement	Pt. 38

CHEMISTRY							
General Chemistry	Chem. s101	Jordan	10	4	8	M.T.W.T.F.	
					1-5	T.	W. 114
General Chemistry	Chem. s103	Jordan	10	4	10	M.T.W.T.F.	
					1-5	Th.	W. 102
General Chemistry	Chem. s105	Jordan	10	4	11	M.T.W.T.F.	
					1-5	T.	W. 114
Qualitative Analysis	Chem. s111	Williams	14	4	10	T.Th.	
					Lab, ar	ranged	W. 102
Quantitative Analysis A	Chem. s112	Williams	14	4	By arran	gement	W. 102
Quantitative Analysis	Chem. s113	Williams	12	4	By arran	gement	W. 217
Practical Organic and Biological Chemistry	Chem. s141	Williams	5	3	By arran	gement	W. 111
Food, Nutrition and Diet	Chem. s344	Williams	5	3	By arran	gement	W. 115
ECONOMICS							
Introduction to Econ	Econ. s102	Shulenberger	5	3	8	M.T.W.T.F.	Pe. 101
General Economics	Econ. s103	Shulenberger	5	3	11	M.T.W.T.F.	Pe. 101
Accounting for Engineers	Econ. s112	Shulenberger	5	3	9	M.T.W.T.F.	Pe. 109
Accounting I	Econ. s201	Shulenberger or					
		Leager	5	3	9	M.T.W.T.F.	Pe. 3
Business Organization	Econ. s210	Leager	5	3	8	M.T.W.T.F.	Pe. 3
Business Law	Econ. s211	Shulenberger	5	3	10	M.T.W.T.F.	Pe. 109
Statistics for Teachers	Econ. s212a						
	and s212b	Leager	5	3	10	M.T.W.T.F.	Pe. 3
Business Statistics	Econ. s214	Leager	5	3	9	M.T.W.T.F.	Pe. 108
Advertising	Econ. s217	Moen	5	3	7	M.T.W.T.F.	Pe. 108
Money	Econ. s221a	Moen	5	3	By arran	gement	Pe. 108
Principles of Insurance	Econ. s330	Leager	5	3	11	M.T.W.T.F.	Pe. 3
Stock Market Operations	Econ. s325	Moen	5	3	8	M.T.W.T.F.	Pe. 108
ENGLISH							
Rhetoric & Composition	Eng. s101	Ladu	5	3	8	M.T.W.T.F.	Pu. 105
Adv. English Grammar	Eng. s202	Clark	5	3	9	M.T.W.T.F.	Pu. 108
Survey of Am. Lit	Eng. s221	Ladu	5	3	11	M.T.W.T.F.	Pu. 105
Bible as Literature	Eng. s238	Ladu	5	3	9	M.T.W.T.F.	Pu. 105
Shakespeare	Eng. s330	Clark	5	3	10	M.T.W.T.F.	Pu. 108
The Romantic Period	Eng. s332	Clark	5	3	11	M.T.W.T.F.	Pu. 108
Milton	Eng. s335	Clark	5	3	8	M.T.W.T.F.	Pu. 108
Cont. American Lit	Eng. s337	Ladu	5	3	10	M.T.W.T.F.	Pu. 105

SCHEDULE FOR SUMMER SCHOOL, 1934.—(Continued)

Name of Course	Number	Teacher	Hours per week		Time of Recitation		Room
			Clock	Credit	Hours	Days	
EDUCATION							
Educational Psychology	Ed. s203a	Garrison	5	3	8	M.T.W.T.F.	H. 3
Educational Psychology	Ed. s203b	Garrison	5	3	10	M.T.W.T.F.	H. 3
Mechanical Drawing for Teachers	Ed. s250	Foster	10	3	By arran	gement	P. 6
Extra Curricular Activities in the Secondary School	Ed. s303	Showalter	5	3	10	M.T.W.T.F.	Pe. 208
Methods of Study	Ed. s305	Cook	5	3	By arran	gement	Pe. 201
Vocational Guidance	Ed. s320	Boshart	5	3	9	M.T.W.T.F.	H. 16
Visual Instruction	Ed. s330	Armstrong	5	3	9	M.T.W.T.F.	Pe. 201
Visual Aids in Social Sciences	Ed. s331	Armstrong	5	3	8	M.T.W.T.F.	Pe. 201
High School Course of Study	Ed. s334	Highsmith	5	3	12	M.T.W.T.F.	Pe. 206
Public School Administration	Ed. s335	Highsmith	5	3	9	M.T.W.T.F.	Pe. 208
Problems in Secondary Education	Ed. s336	Highsmith	5	3	11	M.T.W.T.F.	Pe. 206
Teaching of Geography	Ed. s337	Showalter	5	3	9	M.T.W.T.F.	Pe. 208
Teaching of Science in the Secondary School	Ed. s339	Showalter	5	3	8	M.T.W.T.F.	Pe. 208
Teaching of High School Mathematics	Ed. s341	Mumford	10	5	11-1	M.T.W.T.F.	P. 101B
Theory of Industrial Arts in the Elementary School	Ed. s353	Boshart	5	3	8	M.T.W.T.F.	H. 16
Practical Art Problems	Ed. s354	Boshart	10	3	9-11	M.T.W.T.F.	
					or 11-1	M.T.W.T.F.	H. 15
Art Studies in Elementary School	Ed. s355	Boshart	5 or 10	1½ or 3	9-11	M.T.W.T.F.	H. 15
Special Problems in Teaching Agriculture	Ed. s360	Cook	5	3	9	M.T.W.T.F.	Pe. 201
History of Education	Ed. s364	Mrs. Wallace	5	3	9	M.T.W.T.F.	Pu. 8
Psychology of Sec. School Ed.	Ed. s377	Garrison	5	3	By arran	gement	H. 16
Character Education	Ed. s381	Cook	5	3	11	M.T.W.T.F.	Pe. 201
Supervision—The Improvement of Instruction	Ed. s382	Highsmith	5	3	10	M.T.W.T.F.	Pe. 206
Occupational Counseling	Ed. s412	Boshart	5	3	8	M.T.W.T.F.	H. 16
Problems in Agricultural Teaching	Ed. s416	Cook	5	3	By arran	gement	Pe. 201
Research in Education	Ed. s421	Staff					

ENGINEERING							
Engineering Drawing	M. E. s102	Foster	10 or 20	3 or 6	9-1	M.T.W.T.F.	P. 106
					10-12	M.T.W.T.F.	P. 106
Descriptive Geometry	M. E. s103	Foster	10	3	8-10	M.T.W.T.F.	P. 106
Mechanical Drawing	M. E. s107	Foster	4, 7, or 10	1, 2, or 3	By arrangement		P. 106
Mechanics	C. E. s200	Foster	5, 10 or 15	3, 6, or 9	By arrangement		P. 102
Kinematics	M. E. s203	Foster	10	3	By arrangement		P. 102
GEOLOGY AND PHYSICAL GEOGRAPHY							
Earth History	Geol. s101	Stuckey	5	3	9	M.T.W.T.F.	Pr.
Physical Geography	Geol. s105	Stuckey	7	3	10	M.T.W.T.F.	Pr.
Geology of North Carolina	Geol. s201	Stuckey	7	3	12	M.W.F.	
					Lab by arrangement		Pr.
HISTORY							
American Econ. Hist.	Hist. s101a		5	3	8	M.T.W.T.F.	Pu. 6
Commercial Geography (Comm. & Industrial)	Hist. s101c		5	3	11	M.T.W.T.F.	Pe. 109
Modern European Hist.	Hist. s201b		5	3	10	M.T.W.T.F.	Pu. 8
Contemporary Europe	Hist. s201c	Barnhardt	5	3	9	M.T.W.T.F.	Pu. 6
American Government	Hist. s209	Barnhardt	5	3	10	M.T.W.T.F.	Pu. 6
Recent U. S. History	Hist. s302	Barnhardt	5	3	8	M.T.W.T.F.	Pu. 6
History of North Car.	Hist. s303	Barnhardt	5	3	11	M.T.W.T.F.	Pu. 6
HORTICULTURE							
Vegetable Production	Hort. s209	Randall		3	By arrangement		Pk. 308
Home Floriculture	Hort. s228	Randall		3	By arrangement		Pk. 308
MATHEMATICS							
Mathematical Analysis	Math. s100	Mock	5	3	10	M.T.W.T.F.	P. 101A
Algebra	Math. s101	Mumford	10	5	11-1	M.T.W.T.F.	P. 101B
Plane Trigonometry	Math. s103	Fisher	10	5	8-10	M.T.W.T.F.	P. 209
Analytical Geometry	Math. s101	Mumford	10	5	8-10	M.T.W.T.F.	P. 101B
Differential Calculus	Math. s201	Mock	10	5	8-10	M.T.W.T.F.	P. 203
Integral Calculus	Math. s202	Fisher	10	5	11-1	M.T.W.T.F.	P. 209
MODERN LANGUAGES							
French Prose	Mod. L. s104	Hinkle	5	3	8	M.T.W.T.F.	Pe. 212
French Prose Masterpieces	Mod. L. s313	Hinkle	5	3	9	M.T.W.T.F.	Pe. 212
Elementary German	Mod. L. s102	Hinkle	5	3	10	M.T.W.T.F.	Pe. 212
German Prose	Mod. L. s105	Hinkle	5	3	10	M.T.W.T.F.	Pe. 212
Scientific German	Mod. L. s304	Hinkle	5	3	10	M.T.W.T.F.	Pe. 212
Elementary Spanish	Mod. L. s103		5	3	11	M.T.W.T.F.	Pe. 212
Spanish Prose	Mod. L. s106		5	3	12	M.T.W.T.F.	Pe. 212

SCHEDULE FOR SUMMER SCHOOL, 1934.—(Continued)

Name of Course	Number	Teacher	Hours per week		Time of Recitation		Room
			Clock	Credit	Hours	Days	
PHYSICS							
General Physics and Physics for Textile Students	Phys. s110	Heck	7½ or 15	4 or 8	9 2-4 9-11 2-4	M.T.W.T.F. T. or M.T.W.T.F. T.Th.	P. & E. 113
Physics	Phys. s104	Dixon	9 or 20	5 or 10	8 2-4 8-10 2-4	M.T.W.T.F. M.W. or M.T.W.T.F. M.T.W.T.F.	P. & E. 212
Descriptive Astronomy	Phys. s107	Heck	5	3	12	M.T.W.T.F.	P. & E. 212
Research	Phys. s411						
PHYSICAL EDUCATION							
Theory & Practice Football Coaching	P. E. s112	Miller	4	2	By arrangement		Gym.
Theory & Practice Basketball Coaching	P. E. s113	Miller	4	2	By arrangement		Gym.
Theory & Practice Track & Baseball Coaching	P. E. s114-s115	Miller	6	3	By arrangement		Gym.
Physical Education & Recreational Programs	P. E. s117	Miller	6	3	By arrangement		Gym.
POULTRY SCIENCE							
Poultry Nutrition	Poul. s303	Williams, Dearstyne		3	By arrangement		R. 208
Poultry Diseases	Poul. s305	Gauger, Dearstyne	5	3	By arrangement		R. 208
Commercial Poultry Plant Management	Poul. s306	Williams		3	By arrangement		R. 208
SOCIOLOGY							
Introductory Sociology	Soc. s102	Winston	5	3	11	M.T.W.T.F.	Pu. 8
General Sociology	Soc. s103	Winston	5	3	10	M.T.W.T.F.	Pe. 108
Sociology of City Life	Soc. s302	Winston	5	3	8	M.T.W.T.F.	Pe. 108
The American Family	Soc. s306	Winston	5	3	9	M.T.W.T.F.	Pe. 108

SOILS							
Soil Geography of the U. S.	Soils s220a	Clevenger	5	3	8	M.T.W.T.F.	Pt. 16
Fertilizers	Soils s310	Clevenger	5	3	10	M.T.W.T.	
					Lab. by ar	rangement	Pt. 16
Soils of North Carolina	Soils s315	Clevenger	5	3	11	M.T.W.T.	
					Lab. by ar	rangement	Pt. 16
TEXTILES							
Power Weaving	Tex. s107	Nelson		2	By arran	gement	Tex. Bldg.
Power Weaving Lab.	Tex. s108	Hart		1 or 2	By arran	gement	Tex. Bldg.
Textiles for Teachers	Tex. s115	Nelson	5	3	8	M.T.W.T.F.	Tex. Bldg.
Fabric Design and Analysis I	Tex. s205	Hart		3 or 6	By arran	gement	Tex. Bldg.
Dobby Weaving	Tex. s207	Nelson		3	By arran	gement	Tex. Bldg.
Dobby Weaving Lab. I or II	Tex. s208 or						
	Tex. s209	Hart		1, 2, 3, 6	By arran	gement	Tex. Bldg.
Textile Fabrics: Their Qualities & Uses	Tex. s104	Nelson		3	By arran	gement	Tex. Bldg.
ZOOLOGY							
General Zoology	Zool. s101	Mitchell	9	4	9	M.T.W.T.F.	
					Lab. ar	ranged	Z. 7
General Zoology	Zool. s102	Bostian	9	4	10	M.T.W.T.F.	
					Lab. ar	ranged	Z. 8
Human Physiology	Zool. s103	Bostian	9	3	8	M.W.F.	
					Lab. ar	ranged	Z. 8
Economic Entomology	Zool. s204	Mitchell	9	4	8	M.W.F.	
					Lab. ar	ranged	Z. 7
Animal Nature Study	Zool. s220	Metcalf	9	3	9	M.W.F.	
					Lab. ar	ranged	Z. 201
Systematic Entomology	Zool. s401	Metcalf, Mitchell	5	3	By arran	gement	Z. 201 & 202
Research in Zoology	Zool. s403	Metcalf, Mitchell, Bostian	5	3	By arran	gement	Z. 105

COURSES TO BE GIVEN AT CHAPEL HILL SECOND SIX WEEKS

The consolidation of the Summer School of the University of North Carolina has brought about a correlation which makes possible an easy continuation of work at the Chapel Hill unit during the second session. Students wishing to continue their studies at Chapel Hill during the second six weeks should study the offerings listed below and try to arrange to take the courses given at State College and not given at Chapel Hill during the first session. Then they can arrange their work at Chapel Hill for second session without inconvenience.

All students wishing to attend second session at Chapel Hill, please report to the office of the Director during the first week of Summer School.

STAFF OF INSTRUCTION FOR THE SECOND SEMESTER

University of North Carolina at Chapel Hill
July 25—Aug. 31, 1934

MEMBERS OF THE REGULAR STAFF

RAYMOND WILLIAM ADAMS, Ph.D. ..... *English*
Assistant Professor of English

JAMES OSLER BAILEY, A.M. ..... *English*
Instructor in English

WILLIAM STANLEY BERNARD, M.A. ..... *Greek*
Professor of Greek

RALPH STEELE BOGGS, Ph.D. ..... *Spanish*
Associate Professor of Spanish

EDWARD TANKARD BROWNE, Ph.D. ..... *Mathematics*
Professor of Mathematics

WALLACE EVERETT CALDWELL, Ph.D. ..... *History*
Professor of Ancient History

FREDERIC EDWARD COENEN, A.M. ..... *German*
Instructor in German

JOHN NATHANIEL COUCH, Ph.D. ..... *Botany*
Professor of Botany

JOHN FREDERICK DASHIELL, Ph.D. ..... *Psychology*
Professor of Psychology

JOHN GRAY DOUGLAS, Ph.D. ..... *Geology*
Associate Professor of Geology

JAMES GILBERT EVANS, M.A. ..... *Economics*
Assistant Professor of Economics

ERNEST RUTHERFORD GROVES, B.D. ..... *Sociology*
Research Professor of Sociology

JOHN MINOR GWYNN, A.M. ..... *Education*
Assistant Professor of the Teaching of Latin

JAMES PENROSE HARLAND, Ph.D. ..... *Archaeology*
Professor of Archaeology

FRANCIS CLEMENT HAYES, M.A. ..... *Spanish*
Instructor in Spanish

RICHARD JUNIUS MENDENHALL HOBBS, LL.B. ..... *Economics*
Professor of Business Law

SAMUEL HUNTINGTON HOBBS, Ph.D. ..... *Rural Social-Economics*
Professor of Rural Social-Economics

URBAN TIGNER HOLMES, JR., Ph.D. ..... *French*
Professor of French

GEORGE HOWARD, Ph.D. ..... *Education*
Professor of Education in Extension Teaching

ALMONTE CHARLES HOWELL, Ph. D. ..... *English*
Associate Professor of English

VINTON ASBURY HOYLE, Ph.D. ..... *Mathematics*
Assistant Professor of Mathematics

ELWOOD CARTELYOU HUNTER, A.M. ..... *Education*
Instructor in Education

William Sumner Jenkins, Ph.D. — *Government*
Assistant Professor of Government

Arthur Melville Jordan, Ph.D. — *Education*
Professor of Educational Psychology

Arnold Kimsey King, A.M. — *Education*
Assistant Professor in the Teaching of History

George Harold Lawrence, A.M. — *Public Administration*
Supervisor of Social Field Work

Robert White Linker, Ph.D. — *French*
Instructor in French

Gerald Raleigh MacCarthy, Ph.D. — *Geology*
Associate Professor of Geology

William John McKee, Ph.D. — *Education*
Professor of Education in Extension Teaching

Sallie Belle Marks, M.A. — *Education*
Assistant Professor of Elementary Education

Harold Diedrich Meyer, A.M. — *Sociology*
Professor of Sociology and Supervisor of Field Work

Roy Williamson Morrison, Ph.D. — *Education*
Associate Professor of Education in Extension Teaching

Howard Frederick Munch, A.M. — *Education*
Associate Professor of the Teaching of Mathematics

William Anderson Olsen, A.M. — *English*
Assistant Professor of English

Carl Hamilton Pegg, Ph.D. — *History*
Instructor in History

William Whatley Pierson, Jr., Ph.D. — *History*
Professor of History and Government and Dean of the Graduate School

Earle Keith Plyler, Ph.D. — *Physics*
Associate Professor of Physics

Josiah Cox Russell, Ph.D. — *History*
Instructor in History

Shipp Gillespie Sanders, A.M. — *Latin*
Associate Professor of Latin

Wiley Britton Sanders, Ph.D. — *Public Administration*
Associate Professor of Public Administration

Robert Boies Sharpe, Ph.D. — *English*
Assistant Professor of English

Robert Howard Sherrill, C.P.A. — *Commerce*
Assistant Professor of Accounting

Archibald Kenneth Shields, M.A. — *Spanish*
Instructor in Spanish

John Leroy Smith, A.M. — *French*
Instructor in French

Rupert Bayless Vance, Ph.D. — *Sociology*
Research Associate in Sociology

Henry McGilbert Wagstaff, Ph.D. — *History*
Professor of History

Alvin Sawyer Wheeler, Ph.D. — *Chemistry*
Professor of Organic Chemistry

WILLIAM LEON WILEY, Ph.D. — *French*
Assistant Professor of French

WILLIAM WALDO WILLIAMS, M.S. — *Chemistry*
Assistant in Chemistry

HARRY DEMEBLE WOLF, Ph.S. — *Economics*
Associate Professor of Economics

JOHN BROOKS WOOSLEY, Ph.D. — *Economics*
Professor of Economics

THOMAS EWELL WRIGHT, A.M. — *French*
Instructor in French

VISITING INSTRUCTORS

JOHANNE GJEBULFF, M.S. — *Music*
Teacher in American Institute of Dalcroze Eurythmics, New York City

ROBERT PHILLIP MCCUTCHEON — *English*
Professor of English at Tulane University, New Orleans, Louisiana

CHARLES E. TROXELL — *Music*
Professor of Music, Richmond University, Richmond, Virginia

COURSES OFFERED AT THE UNIVERSITY OF NORTH CAROLINA, CHAPEL HILL, FOR THE SECOND SESSION OF THE SUMMER SCHOOL, JULY 25—AUGUST 31

NOTE:—Courses marked thus (#) are continued from the first term. Before registering for courses so marked, the new student (that is, the student who has not had the first part of the course desired) must confer with the department head or the instructor and secure approval for registration.

ART HISTORY

Courses for Undergraduates

s63a. Architecture: History and Appreciation of Architectural Styles. Credit, ½ course. Mr. Bernard. Hour: 9:00 daily.

s63c. Painting: Masters and Masterpieces from Giotto to Modern Times. Credit, ½ course. Mr. Bernard. Hour: 11:00 daily.

BOTANY

Courses for Undergraduates

s43. Structure and Classification of Seed Plants. Credit, 1 course. Mr. Couch and assistant. Laboratory fee, $4.00. Hours: Lectures, 11:00 daily, and 2:00 F. Laboratory, 2:00 to 5:00 M., T., W., and Th. Prerequisite, General Botany.

Courses for Graduates and Advanced Undergraduates

s114. Morphology and Development of Fungi. Credit, 1 course. Mr. Couch. Hours to be arranged. Laboratory fee, $4.00.

CHEMISTRY

Courses for Undergraduates

s2. General Chemistry. Credit, 1 course. Mr. Williams. Hours: Lectures, 8:00 daily. Laboratory 2:00 and 4:00 daily. Laboratory fee, $5.50.

s62. Organic Chemistry. Aromatic Series. Credit. 1 course. Mr. Wheeler. Hours: Lectures, 8:00 daily. Laboratory, 9:00 and 10:00 daily. Laboratory fee, $10.00. Prerequisite, Chemistry 61.

Courses Primarily for Graduates

s361, and s381. Research in Organic Chemistry and in Physical Chemistry. Mr. Wheeler. Laboratory fee, $10.00.

COMMERCE

Courses for Undergraduates

s72. Principles of Accounting. Credit, 1 course. Mr. Sherill. Laboratory fee, $3.00. Hours: 2:00 to 5:00 daily.

ECONOMICS

Courses for Undergraduates

s32. General Economics (continued). Credit, 1 course. Mr. Evans. Hours: 8:00 and 12:00 daily.

s35b. Evolution of Economic Institutions. Credit, ½ course. Mr. Evans. Hour: 10:00 daily.

s82. Banking. Credit, 1 course. Mr. Woosley. Hours: 9:00 and 11:00 daily.

Courses for Graduates and Advanced Undergraduates

s191. An Introduction to the Labor Problem. Credit, 1 course. Mr. Wolf. Hours: 8:00 and 10:00 daily.

s196. The Economics of The National Recovery Program. Credit, ½ course. Mr. Wolf. Hour: 12:00 daily.

s197. Government and Business. Credit, 1 course. Mr. Hobbs. Hours: 9:00 and 11:00 daily.

Courses Primarily for Graduates

s382. Seminar in Banking and Finance. Credit, ½ course. Mr. Woosley. Hour: 12:00 daily.

EDUCATION

Courses for Undergraduates

s31b. Introduction to Educational Psychology. Credit, ½ course. Mr. Hunter. Hour: 9:00 daily.

s71b. Educational Psychology. Credit, ½ course. Mr. Hunter. Hours: Lecture, 12:00 M., Tu., Th., F. Laboratory 2:00 and 3:00 M.

s98b. General Methods in Secondary Education. Credit, ½ course. Mr. King. Hour: 11:00 daily.

s99b. Principles of Secondary Education. Credit, ½ course. Mr. King. Hour: 8:00 daily.

Courses for Graduates and Advanced Undergraduates

≠ **s101. Introductory Course in School Administration.** Credit, ½ course. Mr. Howard. Hour: 10:00 daily

≠ **s103. Elements of Statistical Methods.** Credit, ½ course. Mr. Munch. Hour: 12:00 daily.

≠ **s105. Guidance and Administration of Pupils.** Credit, ½ course. Mr. Morrison. Hour: 8:00 daily.

s142b. Historical Foundations of Modern Education. Credit, ½ course. Mr. Hollingsworth. Hour: 9:00 daily.

s143b. Social and Educational History of The United States. Credit, ½ course. Mr. Hollingsworth. Hour: 11:00 daily.

s162. Teaching Pupils How to Study. Credit, 1 course. Mr. McKee. Hours: 10:00 and 11:00 daily.

s163b. Evaluating Classroom Instruction. Credit, ½ course. Miss Marks. Hour: 12:00 daily.

s171. The Psychology of Adolescence. Credit, ½ course. Mr. Jordan. Hour: 11:00 daily.

s185. Materials and Methods of Teaching High School History. Credit, ½ course. Mr. King. Hour: 9:00 daily.

s187. Materials and Methods of Teaching High School Latin. Credit, ½ course. Mr. Gwynn. Hour: 10:00 daily.

s189. Materials and Methods of Teaching High School Mathematics. Credit, ½ course. Mr. Munch. Hour: 11:00 daily.

s194. Measurements in Secondary Education. Credit, ½ course. Mr. Morrison. Hour: 11:00 daily.

s196b. The High School Principalship. Credit, ½ course. Mr. Howard. Hour: 8:00 daily.

s197. Social Policy and Education. Credit, ½ course. Mr. McKee. Hour: 8:00 daily.

Courses Primarily for Graduates

s201. Procedures in Educational Research. Credit, ½ course. Mr. Morrison. Hour: 10:00 daily.

s204b. Educational Finance. Credit, ½ course. Mr. Howard. Hour: 12:00 daily.

s272b. Problems in Educational Psychology. Credit, ½ course. Mr. Jordan. Hour: 9:00 daily. Laboratory fee, $1.00.

ENGLISH

Courses for Undergraduates

s22. English Literature. Credit, ½ course. Mr. Bailey. Hour: 9:00 daily. Prerequisite, English 1-2-3.

s44a. Public Speaking. Credit, ½ course. Mr. Olsen. Hour: 10:00 daily.

s50b. Shakespeare. Credit, ½ course. Mr. Olsen. Hour: 8:00 daily.

s79b. Recent English Literature: Poetry from the Late Eighties to The World War. Credit, ½ course. Mr. Howell. Hour: 9:00 daily.

s82. Credit, ½ course. Mr. Adams. Hour: 10:00 daily.

s100b. Directed Readings. Credit, ½ course. Mr. Olsen. Hours to be arranged.

Courses for Graduates and Advanced Undergraduates

s103. Chaucer. Credit, ½ course. Mr. Sharpe. Hour: 9:00 daily.

s111. English Literature of The Renaissance. Credit, ½ course. Mr. Sharpe. Hour: 8:00 daily.

s121a. English Literature, 1600-1650. Credit, ½ course. Mr. Howell. Hour: 10:00 daily.

s131. English Literature, 1700-1780. Credit, ½ course. Mr. MacMillan. Hour: 11:00 daily.

s141a. English Literature of The Romantic Period. Credit, ½ course. Mr. MacMillan. Hour: 10:00 daily.

s143a. Victorian Literature. Credit, ½ course. Mr. Bailey. Hour: 12:00 daily.

s153. Literature of The South. Credit, ½ course. Mr. Adams. Hour: 11:00 daily.

Courses Primarily for Graduates

s340. Special Readings. Credit, ½ course. Messrs. Adams, Bailey, Howell, MacMillian, Sharpe. Hours to be arranged.

s341. Special Research (Thesis Course). Credit, ½ course. Messrs. Adams, Bailey, Howell, MacMillan, Sharpe. Hours to be arranged.

GEOLOGY

Courses for Undergraduates

s12. Historical Geology. Credit, 1 course. Mr. Douglas. Laboratory fee, $3.00. Hours: Lectures, 8:00 daily. Laboratory, 2:00 to 5:00 four days a week.

s14. The Principles of Physical Geography. Credit, 1 course. Mr. MacCarthy. Hours: Lecture, 11:00 daily. Laboratory eight hours a week.

s57. Geography of North America. Credit, 1 course. Mr. MacCarthy. Hours: Lectures, 9:00 daily. Laboratory eight hours a week, to be arranged.

Courses for Graduates and Advanced Undergraduates

s308. Special Research. Credit, 1 course. Hours to be arranged. Special research in geography and geology.

GERMAN**

Courses for Undergraduates

s2. Elementary Course.

s4. Intermediate Course.

s22. Introduction to German Literature.

**The following courses will be offered in the second term if the demand warrants.

HISTORY

Courses for Undergraduates

s2. Foundations of Modern Europe. Credit, ½ course. Mr. Pegg. Hour: 8:00 daily.

s3. Foundations of Modern Europe. Credit, ½ course. Mr. Pegg. Hour: 9:00 daily.

s48. American History: General Course. Credit, 1 course.

s65. Europe in the Crusading Age (1000-1300). Credit, 1 course. Mr. Russell. Hours: 11:00 and 12:00 daily.

Courses for Graduates and Advanced Undergraduates

s101a. Period Studies in Greek History. Credit, ½ course. Mr. Caldwell. Hour: 9:00 daily.

s102a. Period Studies in Roman History. Credit, ½ course. Mr. Caldwell. Hour: 8:00 daily.

s135. Rise of Democracy and Nationalism in Modern Europe. Credit, 1 course. Mr. Wagstaff. Hours: 9:00 and 10:00 daily.

s156. Recent American History, 1898-1920. Credit, 1 course. Mr. Pierson. Hours: 11:00 and 12:00 daily.

Courses Primarily for Graduates

s201a. Historiography. Credit, ½ course. Mr. Caldwell. Hours to be arranged.

s323. Seminar in English History. Credit, ½ course. Mr. Wagstaff. Hours to be arranged.

s341. Seminar in American History. Credit, ½ course. Mr. Pierson. Hours to be arranged.

GOVERNMENT

Courses for Graduates and Advanced Undergraduates

s155. The Constitution of The United States. Credit, 1 course. Mr. Jenkins. Hours: 8:00 and 9:00 daily.

Courses Primarily for Graduates

s321. Seminar in American Government. Credit, ½ course. Mr. Jenkins. Hours to be arranged.

LATIN

Courses for Undergraduates

s1. Beginners' Course. Credit, ½ course. Mr. Gwynn. Hour: 8:00 daily.

Courses for Graduates and Advanced Undergraduates

s105. The Roman Novel. Credit, ½ course. Mr. Sanders. Hour: 10:00 daily.

s122. Roman Satire. Credit, ½ course. Mr. Sanders. Hour: 9:00 daily.

s154. Studies in the Literature of the Classical Period. Credit, ½ course. Mr. Gwynn. Hour: 12:00 daily.

s187. Materials and Methods of Teaching High School Latin. Credit, ½ course. Mr. Gwynn. Hour: 10:00 daily.

Courses Primarily for Graduates

s302. Latin Seminar: Study of a Roman Writer, or a Type of Literary Work, Etc. Credit, ½ course. Mr. Sanders. Hour: 10:00 daily.

NOTE:—Mr. Caldwell's courses, given in the second term, may be counted for credit in Latin by arrangement with the Department. See under History, courses: s101a, s102a, and s201a.

MATHEMATICS

Courses for Undergraduates

= s1. College Algebra. Credit, ½ course. Mr. Browne. Hour: 9:00 daily.

= s2. Plane Trigonometry. Credit, ½ course. Mr. Hill. Hour: 11:00 daily.

= s13. Analytic Geometry. Credit, ½ course. Mr. Hill. Hour: 12:00 daily.

s25. Integral Calculus. Credit, 1 course. Mr. Hoyle. Hours: 8:00 and 10:00 daily.

Courses for Graduates and Advanced Undergraduates

= s141. Differential Equations. Credit, ½ course. Mr. Hill. Hour: 9:00 daily.

= s152. Analytic Projective Geometry. Credit, ½ course. Mr. Browne. Hour: 11:00 daily.

= s206. Theory of Complex Variables. Credit, ½ course. Mr. Browne. Hour: 12:00 daily.

MUSIC

s1. Fundamentals of Music. Credit, ½ course. Mr. Troxell. Hour: 8:00 daily.

s3. Sight Singing. Credit, ½ course. Mr. Troxell. Hour: 9:00 daily.

s26. History of Music. Credit, ½ course. Mr. Williamson. Hour: 9:00 daily.

s51. Music Appreciation. Credit, ½ course. Mr. Williamson. Hour: 12:00 daily.

s57. Harmony (Advanced). Credit, ½ course. Mr. Williamson. Hour: 8:00 daily.

s66. Dalcroze Eurythmics. Miss Gjerulff. Classes scheduled by appointment. (Extra fee.)

NOTE:—Piano, Organ, Violin, Orchestral Instruments, Voice available throughout both terms with or without credit by arrangement with the Department of Music. (Extra fee.)

Improvisation open to students of piano or organ desiring this experience and training should arrange with the Department of Music for lesson hour on the opening day of the session. (Extra fee.)

PHYSICS

Courses for Undergraduates

s22. General Physics. Credit, 1 course. Mr. Plyler and assistant. Laboratory fee, $4.00. Hours: Lectures, 8:00 and 9:00 daily. Laboratory, 2:00 to 5:00 T. and Th. Prerequisite, Mathematics 1-2, and Physics s21.

Courses for Graduates and Advanced Undergraduates

* **s102. Heat.** Credit, 1 course. Mr. Plyler. Hour: 10:00 and 11:00 daily.

* **s202. Theory of Heat.** Credit, 1 course. Mr. Plyler. Hour: 10:00 and 11:00 daily.

*Either s102 or s202 will be given in the second term, depending on the enrollment.

PSYCHOLOGY

Courses for Undergraduates

\# **s22. General Psychology.** Credit, 1 course. Mr. Dashiell and assistant. Laboratory fee, $4.00. Hours: 11:00 and 12:00 daily, and 2:00 and 3:00 on a day to be arranged.

Courses for Advanced Undergraduates and Graduates

s190b. Contemporary Psychological Tendencies. Credit, ½ course. Mr. Dashiell. Hour: 9:00 daily. (Offered only in case of sufficient demand.)

PUBLIC ADMINISTRATION

Courses for Graduates and Advanced Undergraduates

s160a. Introduction to Social Work. Credit, ½ course. Mr. Sanders. Hour: 11:00 daily.

s164b. Family Case Work. Credit, ½ course. Mr. Lawrence. Hour: 9:00 daily.

s198b. Juvenile Delinquency. Credit, ½ course. Mr. Sanders. Hour: 8:00 daily.

ROMANCE LANGUAGES

FRENCH

Courses for Undergraduates

s2. Elementary Course. Credit, 1 course. Mr. Wright. Hours: 8:00 and 12:00 daily. (Entrance credit only.)

s4. Intermediate French. (Continuation of s3, First term). Credit, 1 course. Mr. Linker. Hours: 8:00 and 12:00 daily.

s22. Modern French Literature. Credit, 1 course. Mr. J. L. Smith. Hours: 8:00 and 12:00 daily.

s51. **French Conversation and Composition.** Credit, ½ course. Mr. Wiley. Hour: 11:00 daily.

Courses for Graduates and Advanced Undergraduates

s145. **French Phonetics.** Credit, 1 course. Mr. Wiley. Hours: 9:00 and 10:00 daily.

s171. **French Literature of The Seventeenth Century.** Credit, ½ course. Mr. Holmes. Hour: 11:00 daily.

Courses Primarily for Graduates

s221. **Old French.** Credit, ½ course. Mr. Holmes. Hour: 12:00 daily.

s265. **French Literature of The Renaissance.** Credit, ½ course. Mr. Holmes. Hour: 3:00 daily.

s395. **Research.** Credit, ½ course. (Research in a special field under the direction of a member of the department.)

SPANISH

Courses for Undergraduates

s2. **Elementary Course.** Credit, 1 course. Mr. Shields. Hours: 8:00 and 12:00 daily. (Entrance credit only.)

s4. **Intermediate Spanish.** Credit, 1 course. Mr. Hayes. Hours: 8:00 and 12:00 daily.

Courses for Graduates and Advanced Undergraduates

s111. **Modern Spanish Novelists.** Credit, ½ course. Mr. Boggs. Hour: 12:00 daily.

Courses Primarily for Graduates

s221. **Old Spanish.** Credit, 1 course. Mr. Boggs. Hours: 9:00 and 10:00 daily.

s395. **Research.** Credit, ½ course. (Research in a special field under the direction of a member of the department.)

RURAL SOCIAL-ECONOMICS

Courses for Undergraduates

s53. **History of Agriculture and Rural Life.** Credit, ½ course. Mr. Hobbs. Hour: 8:00 daily.

s91. **Research in Rural Social-Economics.** Credit, ½ course. Staff. Hours to be arranged.

Courses for Graduates and Advanced Undergraduates

s101b. **North Carolina: Economic and Social.** Credit, ½ course. Mr. Hobbs. Hour: 10:00 daily.

s101c. North Carolina: Economic and Social. Credit, ½ course. Mr. Hobbs. Hour: 8:00 daily.

NOTE:—This course is being offered for the first time and may be taken by any student who has previously taken the first half (101a, first term) either in residence or Extension, and by those registered for 101b, second term.

Courses Primarily for Graduates

s301. Rural Economics. Reading and Research. Credit, ½ course. Staff. Hours to be arranged.

s311. Rural Sociology. Reading and Research. Credit, ½ course. Staff. Hours to be arranged.

SOCIOLOGY

Courses for Undergraduates

s42b. Social Problems. Credit, ½ course. Mr. Meyer. Hour: 9:00 daily.

s152. Social Theory. Credit, 1 course. Mr. Vance. Hours: 10:00 and 11:00 daily.

s161b. The Family. Credit, ½ course. Mr. Groves. Hour: 8:00 daily.

s193b. Social Pathology. Credit, ½ course. Mr. Meyer. Hour: 11:00 daily.

STATE COLLEGE RECORD

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Summer Session

JUNE 13---JULY 24, 1935

Announcement of Courses

NORTH CAROLINA STATE COLLEGE
OF
AGRICULTURE AND ENGINEERING
OF THE
UNIVERSITY OF NORTH CAROLINA
STATE COLLEGE STATION
RALEIGH

PUBLISHED MONTHLY BY THE NORTH CAROLINA STATE COLLEGE
OF AGRICULTURE AND ENGINEERING

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SUMMER SESSION, 1935

In accordance with the plans that are being carried out in the consolidation of the Greater University of North Carolina, the summer schools of the University at Chapel Hill, of the State College of Agriculture and Engineering at Raleigh, and the Woman's College at Greensboro have been united into one organization. Beginning with this year the summer term will be conducted as an integral part of the regular college year under the guidance of the regular administrative staff.

The work of the three divisions will be arranged according to function. Elementary Education will be the distinctive field of work at Greensboro; Agricultural, Vocational and Technological training at State College; and Secondary Education and Graduate work the distinctive field at Chapel Hill.

There will be a single session of six weeks at all three of the institutions, with a second term of six weeks at Chapel Hill only. The work of the three institutions is being correlated and coordinated in such a way that the students and teachers of the State may be better served than hitherto.

The twenty-second Summer Session of the North Carolina State College of Agriculture and Engineering of the University of North Carolina, begins Wednesday, June 13th, and closes Tuesday, July 24th. In the courses given, the work will be directed primarily to the needs of the teachers in secondary education and to the regular college students working for a degree. The usual technical courses will also be offered, as well as courses for teachers of Industrial Arts who hold a certificate of Grammar Grade C or higher.

In addition to the subject-matter courses open to all students who have graduated from high school and particularly suitable for those persons preparing to teach in the secondary schools, there will be the usual methods courses.

The State College Summer School is desirous of using its faculty and laboratories, which are particularly well prepared and equipped in the scientific and technical fields, to meet the rapidly developing needs of the State.

AGRICULTURE

It is the purpose of the Summer School of State College to render every possible service to the farmers of North Carolina and to all those interested in helping the farmers with their many intricate problems. The "New Deal" in agriculture calls for an entirely new approach to the whole farm situation. The Agricultural College, including the Experiment Station, occupies a position of leadership in this field, and will offer during the Summer School courses for teachers, students in agriculture, farmers and any others wishing to take advantage of the facilities of the College.

COTTON CLASSING

The Cotton Classing Course in the Summer School offers intensive work in the grading and stapling of cotton.

The course consists of lectures and daily practice in grading and stapling, according to the "Universal Cotton Standards."

This work is designed to prepare men to enter the cotton business and to give intensive training for men who are now in active service. (See description of the course on page 27.

HIGH SCHOOL PRINCIPALS AND SCIENCE TEACHERS

There will be offered for principals and teachers of high schools, both professional and subject-matter courses. Special courses in methods of teaching high school science, together with courses in the various physical sciences, will occupy a large place in the Summer School. This is made necessary by the demand throughout the State for professionally trained teachers of science in the secondary schools. Teachers planning to take these courses are requested to bring their high school texts.

CURRICULUM STUDY PROGRAM IN NORTH CAROLINA

The Summer School at State College will be definitely identified with the curriculum construction program which is being carried on by the State Department of Public Instruction.

The curriculum materials gathered this year by committees and individual teachers are to be criticized, evaluated, and as far as possible prepared as new courses of study in the various subject matter fields.

Courses distinctly for teachers in special professional fields, appearing in this catalogue, may be changed in content and credit hours, or new courses introduced, in order to cooperate with the State Department of Public Instruction. This will provide opportunity for teachers interested in these special fields to devote the full time of one or more courses studying these problems. Full information regarding the specialized fields in which this institution will cooperate will be announced by the State Department of Public Instruction.

INDUSTRIAL ARTS

During the Summer School emphasis will be given to the preparation of teachers of industrial arts for the various communities of North Carolina. The rapid growth of industrial education in our State is creating a demand for supervisors and teachers who are competent to develop it in the right direction. Courses will be given in shop practice, mechanical drawing, methods of teaching, subject-matter, and administration.

Supervisors and teachers are needed for the work in the junior and senior high schools, part-time and continuation schools, and evening schools. The need is for those who are familiar with both general and vocational education and are capable of placing the proper emphasis on the courses to be outlined for a particular locality.

Industrial arts education depends largely upon the soundness of the philosophy concerning the type of training which underlies the introduction of industrial studies. For this reason those professionally minded teachers with vision will welcome courses giving them a better basis for their work in the classroom.

The purpose of the courses in Industrial Arts for the Elementary School is to create interest in these problems using them to motivate the elementary school subjects and to prepare teachers and supervisors who will become leaders in introducing this work in their school systems. Credit for these courses may be used either in raising or renewing certificates.

Teachers desiring to raise or renew their certificates will take the first two of the courses in the list following, and one course selected from the remainder of the list.

Ed. s353. The Theory of Industrial Arts. Five hours a week; three credits.

*Ed. s354. **Practical Arts Problems.** Ten hours a week; three credits.

Tex. s115. **Courses for Teachers.** Four hours a week; two credits.

Ed. s203b. **Educational Psychology.** Five hours a week; three credits.

Ed. s320. **Vocational Guidance.** Five hours a week; three credits.

*Ed. s355. **Art Studies in Industrial Arts Problems.** Ten hours a week; 1½ or 3 credits.

*Ed. s381. **Guidance and Discipline of Students.** Five hours a week; three credits.

NOTE.—The above courses are described elsewhere in this bulletin.

TEXTILES

The Textile School at State College occupies a place of merited leadership in this country. A State with North Carolina's rank in the textile field needs to take advantage of the latest things in research and training in this North Carolina's largest industry. The Textile School offers its equipment and faculty to the people of the State during the Summer School.

Courses in textiles designed for men who are employed in the manufacturing plants, as well as courses for teachers who are employed in the textile communities, will be given. These courses will be arranged on a unit basis in order to meet the needs of the various groups who may wish to come to the College for different periods.

VOCATIONAL GUIDANCE

Guidance is recognized as a part of the work of each teacher in the school. Pupils of all ages require assistance in their growth and progress through their school problems. Each stage of school development as elementary, junior high, senior high, and college requires special attention which the individual teacher may render. In addition to the work done in the classroom, there is that of the school counselor and director of the work whose duty it is to provide materials and programs of work, together with the care of such special cases as requires specific aid.

Vocational Guidance, Ed. s320, is a beginning course for advanced undergraduates and graduates, also for teachers in service who wish to help in guidance activities. Occupational Counseling, Ed. s412, is a graduate course for those who have had Ed. s320 and some experience in teaching, and those who have had a wider experience in school and industry. Closely correlated with these courses are those in psychology, sociology, economics and testing.

PHYSICAL EDUCATION AND COACHING

The Summer School will offer opportunity for coaches and teachers of physical training to take specialized courses in the Department of Physical Education. The courses in athletic coaching and physical training are arranged especially for instructors already engaged in teaching during the regular school year and for others who wish to supplement the preparation they may have received in college. The courses take up the more important problems of coaching, and are designed for the purpose of fitting men more completely to take charge of athletics and physical training in schools and colleges throughout the country, and for fitting women to coach basketball, and direct physical training programs.

The College has now arranged physical education as one of the options in the training of high school teachers. This permits a student to elect

*A fee of $1.00 will be charged those taking Ed. s354 and Ed. s355 to pay for the materials used.

physical education as one of the fields in which he is preparing to teach, and by completing the requirements of this option, and one other, to be certified by the State Department of Education to teach in the two fields. The College has not been able to supply the demand for men with this training.

Leaders in education now recognize the fundamental need of athletics as an important part of any broad educational program. The demand for competent teachers, supervisors, and directors far exceeds the supply. This is especially true in case of men qualified both in coaching and in conducting classes in physical training. Our schools are seeking men who are college trained to take charge of their athletics; men who are versed in all phases of athletic coaching and administration. Approximately thirty-six states in the Union now have adopted legislation making physical education a prescribed part of the elementary and secondary school program.

MUSIC AND ASSEMBLIES

The success of the musical organizations of the Summer School under the direction of Mrs. Lillian Parker Wallace has elicited favorable comment from friends throughout the city. These are voluntary organizations and Mrs. Wallace kindly gives her services to these groups without charge. Students interested in music should by all means bring their musical instruments with them.

Only one assembly period per week will be provided. Interesting programs will be arranged for each of these. All students and faculty members are expected to attend these assemblies.

RECREATION

There will be supervised recreation, consisting of tennis tournaments, baseball, volleyball, basketball and handball. Instruction in swimming will be provided for both men and women. The new swimming pool, lockers and showers, and other gymnasium facilities will be available to all students.

A popular occasion during the 1934 Summer School was the ALL COLLEGE PARTY. These parties give an opportunity for the students and faculty to know each other better by playing and dancing together. More of these will be provided in 1935.

COLLEGE CREDIT

Beginning with 1924-1925, the regular session of State College was divided into three terms; consequently "credit," as used throughout this bulletin, refers to term credit, or twelve weeks work, unless otherwise designated. Therefore, in order for the college-credit courses to count for a full term's work, they will be given, if for five credits, ten periods a week; if for three credits, five periods a week. Since, however, no student will be allowed to take more than eighteen hours of work per week without special permission, this restriction will prevent student's taking more than one ten-period course.

Thirty days of work during the six weeks will be accepted as meeting Summer School requirements if all the demands of the course are met. This includes one day for registration and one day for examination.

The courses for college credit are open to graduates of standard high schools, and to others of equal qualifications. These courses give college students the opportunity to remove conditions, so that they may enter their classes in the fall in full standing. They will also make it possible to secure advanced credit. The college-credit courses are also open to teachers who hold standard State certificates.

All professional courses offered will have value both for teachers' certificates and for college credit. The subject-matter courses may be counted by teachers for academic credit towards securing or raising their certificates.

PROVISION FOR BOTH MEN AND WOMEN

All courses are open to both men and women. Special accommodations in the dormitories are provided for the women, and special attention will be given to their comfort and welfare.

The fifth dormitory will be set apart for women in attendance upon the Summer School and will be under the supervision of Mrs. Mary Smithwick, who has served so efficiently for several summers. The sixth dormitory will be reserved for married couples wishing to attend Summer School.

The variety of courses offered during the State College Summer School should appeal not only to those women in the teaching profession, but to those who are interested in taking advantage of these courses in preparation for other vocations and leading toward a college degree. Young women living in Raleigh and in nearby territory who are working for a college degree should take advantage of this opportunity.

EDUCATIONAL FORUM

An open forum for discussion of timely subjects in the several larger fields of study in the College will be conducted for the benefit of Summer School students. These meetings will consist of an opening lecture by a recognized leader in his field, followed by a period of round table conference. These meetings will be as frequent as the attendance and interest will warrant.

PERSONAL PROBLEMS CONFERENCE

In view of the unusually difficult conditions under which teachers are working, the Summer School is providing for a weekly conference period of faculty and students for the consideration of urgent problems in fields in which students may not be able to get sufficient information and help in regular courses. The conference plan will have the advantage of having a number of faculty members in attendance to bring in their individual experience and points of view bearing on the problem under consideration. This plan aims to afford students the opportunity to have light thrown upon just as many of their general and individual problems as possible.

OPPORTUNITY FOR INTERVIEWS

Members of the faculty will maintain office hours for consultation with students on problems related to their respective fields of work.

In addition to regular personal and professional assistance the State College faculty is always anxious to give, it should be of tremendous value to teachers to attend Summer School in Raleigh where they are in easy access to the various State departments. This is especially true in connection with personal interviews teachers may arrange with heads of divisions in the State Department of Education. The Director's office will be glad to aid in arranging for these interviews.

SPECIAL FEATURES

A reception for students and faculty, followed by other social and recreational events such as week-end picnics and excursions, serve to foster a congenial spirit in the student body, as well as to keep students physically and mentally fit for efficient study.

FEES AND EXPENSES FOR SIX-WEEKS PERIOD

All fees and other charges are payable in advance or upon registration, and all checks should be payable to North Carolina State College.

Room Rent (per person)	$ 7.50
Board at College Cafeteria	30.00

College Fees

For Residents of North Carolina	27.50
For Non-Residents	40.00

All students occupying a room alone will be charged $10.00.

Students taking in excess of the normal load of three courses, not exceeding eleven credits, will be charged a fee of $5.00 for each additional course. Double courses will be counted as two courses.

There will be a key deposit of twenty-five cents, which amount will be refunded when the key is returned.

BOARD AND LODGING

The College dining room will not be kept open during Summer School. The cafeteria, which is in the same building with the dining room, will be run for the benefit of the Summer School students and faculty.

A great many members of the faculty and regular college students eat in the cafeteria and find it very satisfactory, and about as cheap as the dining room, with the addition of greater variety from which to select, and longer periods in which to eat. The cafeteria charges are reasonable. Students may pay for meals a la carte or they may buy tickets for the six weeks for $30.00.

Students will be assigned to rooms upon their arrival at the College. In case it is desired to change the room assignments, permission to do so must first be obtained from the Superintendent of Buildings. In no case may a room be taken until it has been regularly assigned.

WHAT STUDENTS NEED FOR THEIR ROOMS

The College rooms are supplied with necessary furniture. Each student, however, should bring towels, sheets, one pillow and two pillow cases, and two bedspreads for a single bed.

REGISTRATION

All registrations will be conducted in Frank Thompson Gymnasium beginning at 9 a.m., on June 12th. Students are expected to report in person on Wednesday, June 12th, so that they may begin class work on the morning of Thursday, June 13th, at 8 o'clock. Deans and Directors of Instruction will be present to advise students relative to courses. The administration reserves the right to cancel any course for which the registration is less than eight.

DIPLOMAS

Students expecting to receive a degree at the end of the Summer School should come to the Office of Registration early in the session and check up on all credits; also check their names as to correctness of spelling, etc., in order that they may appear properly upon the dip'oma.

HOURS OF WORK

It is important to notice that teachers are required to take at least fifteen hours weekly in order to receive credit for one summer session.

Additional credits may be taken by students if they have points to justify, and by teachers on approval of the Director. However, a fee of $5.00 will be charged for the extra course above the three allowed as a normal load, in no case to exceed eleven credits. In no case will a student be allowed more than twelve credits per week. Each student will be allowed to audit a class five times, if agreeable to instructor.

THE ATTRACTIONS OF RALEIGH

Being the capital of one of the original thirteen states, Raleigh is unusually rich in historical collections, fine public buildings, and interesting places and memorials. It is interesting, also, for its churches, its schools, its hotels, its office buildings, and its growing commercial and industrial activities. Opportunities will be given the students to visit the places of interest.

The various churches welcome all Summer School students to Sunday school and church services, and their pastors have taken a very friendly interest in the morning services at the College auditorium. Raleigh will be found in all respects a delightful place of residence.

THE SOCIAL CENTER

The Y. M. C. A. building will be the social center of the school. This building contains a reading room, and auditorium, several reception rooms, telephone booths, and other conveniences for the promotion of the social life of the students.

THE D. H. HILL LIBRARY

The Library contains over 35,000 bound volumes, exclusive of government publications and much unbound material. More than 500 periodicals are received currently. The Library is a depository for the publications of the United States government and also receives practically all the experiment station publications from the different states. In addition there is a collection of foreign agricultural documents.

Two reading rooms afford an opportunity for study under pleasant conditions. A trained staff is available to render efficient service to the borrowers.

In addition to the resources of the D. H. Hill Library, the facilities of the Olivia Raney Library and the State Library will be available to Summer School students for reference work.

FRANK THOMPSON GYMNASIUM

The Frank Thompson Gymnasium is without doubt the finest and best equipped gymnasium in the South. The main floor is 130 by 110 feet, with an inter-collegiate basketball court of maximum size, and seating capacity for 2,500 spectators without using the gallery. Two maximum sized cross courts make it possible to run off class and tournament games. The auxiliary gymnasium or exercise room is 110 by 40 feet. Both of these rooms are equipped with full gymnasium apparatus and handball courts. The basement is fitted up with 1,000 private steel combination lockers. Team training rooms, equipped with private showers and lockers, a towel service room, an equipment room, and a wrestling and boxing room compose one-half of the basement. The other half is given over to the armory.

The swimming pool is located in an annex amply lighted both by windows and skylights, and finished with white tile. The pool is 75 by 30 feet, with room sufficient to accommodate several hundred spectators.

MEETING OF TEACHERS OF AGRICULTURE AND YOUNG TAR HEEL FARMERS

The annual conference of North Carolina teachers of vocational agriculture and the annual meeting of Young Tar Heel Farmers, a statewide organization of students of vocational agriculture, will be held at State College, June 17-22.

SCHOOL FOR JANITORS AND FIREMEN

The Mechanical Engineering Department of North Carolina State College, as a feature of the Summer School, conducts a short course of six days for white janitors and firemen, teaching the fundamental principles of combustion, how to fire economically, and general instructions about heating systems and operation of the plant. The mornings are given to lectures and talks by members of the College faculty and representatives from other State departments, and the afternoons are given over to the practical problems and to inspection trips to different schools. The total cost which includes cost of registration and room rent will not exceed $3.00. Board is not furnished, but can be secured from the College Cafeteria. The 1935 school will be held the week of July 22-27. Applications for admission should be sent to Professor L. L. Vaughan, North Carolina State College, Raleigh, North Carolina.

COURSES TO BE OFFERED IN THE SUMMER SESSION

ABBREVIATIONS FOR BUILDINGS

C.—Ceramic
G.—Gymnasium
H.—Holladay
P.—Page
P. & E.—Physics and Electrical Engineering Building
Pe.—Peele Hall
Pk.—Polk Hall
Pr.—Primrose
Pt.—Patterson
R.—Ricks
T.—Textile
Pl.—Pullen Hall
W.—Winston
Z.—Zoology Building

The courses appearing hereafter with numbers 100, 200, and the 300 courses, which are starred, may be taken for undergraduate credit only.

AGRICULTURAL ECONOMICS

Agr. Econ. s260. Agricultural Economics. Five hours a week; three credits. Mr. Forster. 10 M. T. W. T. F. R. 208.

A study of the economics of agricultural production; the nature and characteristics of the factors of production; the laws relating to the combination of the factors; the factors affecting the choice of farm enterprises.

Agr. Econ. s265. Farm Marketing. Five hours a week; three credits. Prerequisite: Economics 102. Mr. Forster. 9 M. T. W. T. F. R. 208.

A study of the economic principles underlying successful marketing of farm products, market organization and control, price-making forces, and critical examination of the present system of marketing farm products.

Agr. Econ. s269. Farm Accounting. Five hours a week; three credits. Mr. Forster. 11 M. T. W. T. F. R. 208.

This course deals with the practical aspects of farm accounting, such as preparation of inventories of farm property, simple financial statements, method of keeping farm records, analysis of farm records, and the interpretation of results obtained from farm business transactions. Attention will also be given to methods of obtaining information on the business aspects of farming.

Agr. Econ. s365. National Economic Policies Affecting Agriculture. Five hours a week; three credits. Mr. Forster. By arrangement. Prerequisite: Econ. 103, Agr. Econ. 260, Agr. Econ. 265.

This course will center its discussion on the present Federal program of Agricultural Relief. Analysis will be made of different farm relief proposals for marketing and credit. Attention will be given to the ways in which vocational teachers, county agents and others may correlate their efforts with the Federal program.

AGRICULTURAL ENGINEERING

Agr. Eng. s130. Farm Equipment. Three credits. Mr. Weaver. By arrangement. Pt. 4.

A study of modern mechanical equipment for the farm.

Agr. Eng. s135. Terracing and Drainage. Three credits. Mr. Weaver. By arrangement. Pt. 4.

A study of the different methods of disposing of surplus water and the prevention of erosion.

Agr. Eng. s155. Farm Engines. Three credits. Mr. Weaver. By arrangement. Pt. 5.

The principle of gas engine operation, its application to single and multiple cylinder engines, and their repair and adjustment.

Agr. Eng. s250. Farm Machinery and Tractors. Three credits. Mr. Weaver. By arrangement. Prerequisite: Agr. Eng. 155. Pt. 4.

A study of the design, construction and operation of modern labor-saving machinery.

ANIMAL HUSBANDRY AND DAIRYING

A. H. s202. Animal Breeding. Three credits. Prerequisite: A. H. 101, 102. By arrangement. Mr. Ruffner.

A study of breeding and improvement of our animals; a first hand study of successful breeding establishments and their problems.

A. H. s203. Advanced Stock Judging. Three credits. Prerequisite: A. H. 101. By arrangement. Mr. Haig. Mr. Ruffner.

A study of market and show-ring requirements in the selection of horses and mules, beef cattle, dairy cattle, sheep and swine. Breed characteristics of these animals are studied in detail.

A. H. s217. Ice Cream Making. Four credits; lectures and laboratories. Prerequisite: A. H. 103. Mr. Clevenger. By arrangement. Pk. 110.

Standardizing of mixing and freezing of ice cream, sherbets, and other frozen products, and the physical principles involved; types of freezers, flavoring materials, fillers and binders; ice cream standards; the theory and practice of artificial refrigeration and its use in the ice cream plant.

A. H. s304. Herd Improvement. Five times a week; three credits. Prerequisite: A. H. 101, 102, 103. Mr. Haig. By arrangement. Pk. 110.

This course is designed for training students as supervisors of cow-testing associations in North Carolina. Rules and requirements for Advanced Registry Testing are studied in detail. Lectures are supplemented with laboratory work, and the student is required to do practical work in keeping feed costs, milk weights, butterfat tests necessary in the efficient management of dairy associations.

A. H. s308. Live Stock Management. Three credits. Prerequisite: A. H. 102. By arrangement. Mr. Ruffner.

A study of successful methods of operating farms devoted chiefly to livestock production.

Courses for Graduates Only

A. H. s402. Research Studies in Animal Husbandry. Three credits. Prerequisite: Eighteen credits in A. H. By arrangement. Staff.

An intensive study of experimental data.

BOTANY

Bot. s101. General Botany. Two lectures, two recitations, eight hours laboratory. Four credits. Mr. Shunk. 8, 2-4, M. T. W. T. Pt. 47.

Nature of the Higher Plant. A course presenting the fundamentals of the structure and function of the typical flowering plant.

Bot. s102. General Botany. Four credits. Mr. Shunk. 8, 2-4 M. T. W. T. Pt. 47.

Survey of the Plant Groups. An introduction to the various major kinds of plants through the study of the life histories of types.

Bot. s203. General Bacteriology. Four recitations, eight hours laboratory. Four credits. Mr. Shunk. Prerequisite: Botany 102 or equivalent. 11, 2-4, M. T. W. T. Pt. 47.

An introduction to the principles of bacteriology. Laboratory work on modern cultural methods of handling and studying bacteria.

Bot. s204. Systematic Botany. Two lectures, eight hours laboratory. Three credits. Mr. Shunk. Prerequisite: Elementary Botany. 9, 2-5, T. Th. Pt. 47.

An introduction to the local flora and the classification of the plants included therein.

Courses for Graduates Only

Botany s401. Pathology of Special Crops. Three credits. Prerequisite: Bot. 201 or 203, 301. Mr. Lehman or Mr. Poole. By arrangement.

A comprehensive study of the etiology, symptoms, and control of specific diseases.

Botany s402. Bacteriology: Special Studies. Three credits. Prerequisite: Bot. 203, 302. Mr. Shunk. By arrangement.

Special work on restricted groups of bacteria such as nitrogen bacteria of the soil, milk organisms and special groups of bacteria in water.

Botany s406. Research in Botany. Three credits. By arrangement. Prerequisite: 30 hours 100-300 courses in Botany.

CHEMISTRY

Chem. s101. General Chemistry. Five hours in classroom and five hours in laboratory each week. Four credits. Equivalent to first term General Chemistry as given in the regular college year. Messrs. Wilson and Satterfield. 8 M. T. W. T. F.; 1-5 T. W. 114.

Composition and properties of air and water. First principles of Chemistry, such as atomic theory, laws of chemical combination, valence, chemical formulas and equations, oxidation, reduction, behavior of gases and solutions. Study of a few typical elements, such as oxygen, hydrogen, carbon and nitrogen, together with their simpler compounds.

Chem. s103. General Chemistry. Five hours in classroom and five hours in laboratory each week. Four credits. Equivalent to second term General Chemistry as given in the regular college year. Messrs. Wilson and Satterfield. 10 M. T. W. T. F.; 1-5 Th. W. 102.

Particular attention given to chlorine, sodium, nitrogen, sulfur, fluorine, bromine, and their compounds. Study of such common substances as salt, lye, soda, carbon disulfide, prussic acid, petroleum, coal tar, acetylene; ammonia and its more interesting uses such as in ice machines; sulfur dioxide in household refrigerators and as a bleaching and germicidal agent; compounds of nitrogen in warfare and agriculture. Introduction to acids, bases, salts, ionization, hydrolysis, equilibrium, the periodic law and the new theories of the structure of the atom.

Chem. s105. General Chemistry. Five hours in classroom and five hours in laboratory each week. Four credits. Equivalent to third term General Chemistry as given in the regular college year. Mr. Wilson. 11 M. T. W. T. F. Laboratory 1-5 T. W. 114.

Chemistry of clays, ceramics, glass, cement, soils, fertilizers, insecticides, lime, hard water alloys, paints, storage batteries, photography, flames and explosions. Compounds and properties of phosphorous, arsenic, bismuth, silicon, boron, potassium, calcium, magnesium, zinc, aluminum, iron, tin, lead, nickel, copper, mercury, silver, gold, platinum and other less common elements. Thermochemistry, colloids and radioactivity.

Chem. s111. Qualitative Analysis. Two hours lecture with four laboratory periods of three hours each, per week. Equivalent to one term of college work. Four hours credit. Prerequisite: General Chemistry. Mr. Wilson. 10 T. Th.; Laboratory to be arranged. W. 102.

A systematic study and separation of the metallic ions and non-metallic ions into their respective groups, their identification and the chemical reactions involved. The last two weeks will be given over to the complete analysis of mixed salts, compounds, and alloys.

Chem. s112. Quantitative Analysis, A. Two lectures and twelve hours laboratory. Equivalent to one term of college work. Four hours credit. Prerequisite: Qualitative Analysis. Mr. Wilson. Arrange. W. 102.

This work will deal with the theory and practice of making up and standardizing acids, bases, di-chromate and permanganate solutions, also the determination of the strength of unknown acids and bases, the analysis for the per cent purity of iron ores, oxalates, sulphates, magnesium phosphate rock, etc.

Chem. s113. Quantitative Analysis. Four credits. Mr. Wilson. Required of sophomores in Chemical Engineering and those majoring in Chemistry. Prerequisite: Chem. 111. By arrangement. W. 217.

A continuation of Chem. 112. Substances of more difficult nature are analyzed, minerals, steel, alloys, limestone, Paris green, etc.

Chem. s141. Practical Organic and Biological Chemistry. Five hours a week.; three credits. Prerequisite: Chem. 101, 103, 105. Mr. Satterfield. 8 M. T. W. T. F.

Hydrocarbons, alcohols, aldehydes, ketones, acids, ethers, esters, amino acids and benzine derivatives; carbohydrates, fats, proteins, and related compounds; vitamins, enzymes, hormones, flavors, and miscellaneous.

Chem. s240. Food Products and Adulterants. Five hours a week; three credits. Prerequisite: Chem. 101, 103, 105 and 141. Mr. Satterfield. 9 M. T. W. T. F.

Food principles, cereals, starches, sugars, fats, milk and mild products, the packing house, food preservation, beverages, spices and condiments; food legislation.

Chem. s341. Vitamins. Five hours a week; three credits. Prerequisite: Chem. 141 or 221. Mr. Satterfield. 12 M. T. W. T. F.

Application of vitamin hypothesis to animal nutrition; history, nomenclature, properties, distribution, effects of deficiencies, and vitamin values.

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*If there is a demand for graduate work, these courses will be given.

Chem. s344. Food and Nutrition. Five hours a week; three credits. Prerequisite: Chem. 141 or 221. Mr. Satterfield. 10 M. T. W. T. F.

Carbohydrates, fats, proteins, amino acids, minerals, fiber, vitamins and enzymes; nutritive value of food materials; digestion, food idiosyncrasy; acidosis and alkalosis.

ECONOMICS

Econ. s102. Introduction to Economics. Five hours a week; three credits. Mr. Shulenberger. 8 M. T. W. T. F. Pe. 101.

This course is the regular college one-term course required of all students in Engineering and is designed for those students who do not feel able to devote more than one term to the study of economics, and also for teachers preparing to teach economics in high schools.

This is an elementary course in economics. It treats of the business aspects and economic organization of society. It includes a study of the great fundamental economic laws which apply to all professions and occupations; a study of the production, distribution and value of economic goods, and a study of the institutions, agencies, and ideals which dominate, operate and control the manner, means, and methods of making a living.

Econ. s103. General Economics. Five hours a week; three credits. Mr. Shulenberger. 11 M. T. W. T. F. Pe. 101.

This is the first term of the regular college course in General Economics.

An introduction to the general field of economics. A study of economic institutions and the general principles governing the production and distribution of wealth under the existing economic organization.

Sections for F. W. S.

Econ. s112. Accounting for Engineers. Five hours a week; three credits. Mr. Shulenberger. 9 M. T. W. T. F. Pe. 109.

Required of students in the School of Engineering. Not open to students in Business Administration.

A survey of accounting and financial statements and records; their construction, their use and interpretation.

Econ. s201. Accounting I. Five hours a week; three credits. Mr. Shulenberger or Mr. Leager. 9 M. T. W. T. F. Pe. 3.

Required of all sophomores in Business Administration and Industrial Management.

A course in the theory and practice of accounting, covering the essential principles of accounting as applied to the several types of business organizations, giving interpretations of the structure, form, and uses of formal business statements such as Balance Sheets, Statements of Profit and Loss, etc.

Sections for F. W. S.

Econ. s210. Business Organization. Five hours a week; three credits. Prerequisite: Econ. 102 or 103. Mr. Leager. 8 M. T. W. T. F. Pe. 3.

Forms of business enterprises, single enterprises, partnerships, joint-stock company, corporation, and principles of business management.

Econ. s211. Business Law. Five hours a week; three credits. Prerequisite: Econ. 102 or 103. Mr. Shulenberger. 10 M. T. W. T. F. Pe. 109.

Required of seniors in Business Administration, and in Ceramic, Chem-

ical, Civil, Architectural, Electrical, and Mechanical Engineering and teachers of commercial subjects. Elective for other students.

A general survey of the sources of law, fields of law, contracts, agency, sales, law of partnerships and corporation, negotiable instruments, bailments and carriers, personal property, suretyship and guaranty, bankruptcy, crimes in business.

Econ. s217. Advertising. Five hours a week; three credits. Mr. Moen. 7 M. T. W. T. F. Pe. 108.

Principles and practices of advertising and its relation to the distribution and sales program.

***Econ. s325. Investments.** Five hours a week; three credits. Mr. Moen. 8 M. T. W. T. F. Pe. 108.

A description and analysis of the principles and practices of the organized exchanges. Investment securities.

Econ. s330. Principles of Insurance. Five hours a week; three credits. Prerequisite: Econ. 103 or equivalent. Mr. Leager. 11 M. T. W. T. F. Pe. 3.

A general course dealing with the various fields of insurance—life, fire, health, accident, credit, automobile, employees' liability and workman's compensation.

EDUCATION

Courses for Undergraduates

Ed. 101. Introduction to Psychology. Five times a week; 3 credits. Mr. Cruze. 11 M. T. W. T. F.

A study of the structure, function, and laws of human behavior with applications of psychology to everyday life.

Ed. s203a. Educational Psychology. Five hours a week; three credits. Required of students in Education; elective for others. Mr. Cruze. 8 M. T. W. T. F. H. 3.

Original nature and environment are analyzed in this course as to their function in the educational processes. The elementary principles of psychology are illustrated and studied as they relate to the learning process.

Ed. s203b. Educational Psychology. Five hours a week; three credits. Required of students in Education; elective for others. Mr. Cruze. 10 M. T. W. T. F. H. 3.

This part of educational psychology is concerned with the physical and mental development of high school boys and girls. Social development; character development; emotional development and control; religious and moral development; and, mental hygiene are topics given special consideration.

Note to Teachers of Industrial Arts:

Especially for industrial arts teachers, courses will be offered in woodworking, metal work, electrical work, auto-mechanics and mechanical drawing. The instructors will be men of wide experience helpful to teachers of general shop and unit courses.

Ed. s250. Mechanical Drawing for Teachers. Ten hours a week; three credits. Mr. Foster. By arrangement. P. 6.

Lectures and drawing room practice involving problems of junior and senior high school mechanical drawing. Lettering, instrument practice, projections, intersections, developments, tracing, and blue-printing.

*Ed. s303. **Extra-Curricular Activities in the Secondary School.** Five hours a week; three credits. Prerequisite: Junior standing or teaching experience. Mr. Showalter. 10 M. T. W. T. F. Pe. 208.

The home room; pupil participation in government, the assembly; clubs; publications; recreational activities; athletics; honor societies; social organizations; financial support.

Ed. s320. **Vocational Guidance.** Five hours a week; three credits. Mr. Boshart. Prerequisite: Twelve credits in Education. 8 M. T. W. T. F. H. 16.

Treats of the problems of directing pupils in the study of occupations for the purpose of selecting satisfactory life work. It includes studies of the history of occupational guidance and personnel administration, principles and practices in guidance and employment, compulsory school laws, child labor legislation, and forms and records essential for school use.

*Ed. s330. **Visual Instruction.** Five hours a week; three credits. Prerequisite: Twelve credits in Education. Mr. Armstrong. 11 M. T. W. T. F. Pe. 201.

An advanced course in the psychology, methods, and technique of visual instruction; its place and limits, evaluation and expense of various aids, aids available. Practice in the making and use of practical visual aids.

*Ed. s331. **Visual Aids in Social Sciences.** Five hours a week; three credits. Prerequisite: Twelve credits in Education. Mr. Armstrong. 8 M. T. W. T. F. Pe. 201.

A detailed study of visual materials, devices, and procedures applicable to teaching the social sciences, including geography. Emphasis will be given to motivation, facilitating the learning process, and fixation. Various devices will be used by the class.

*Educ. s334. **The Public School Curriculum.** Five hours a week; 3 credits. Prerequisite: Junior standing or teaching experience. Elective for teachers and principals. Mr. Showalter. 12 M. T. W. T. F. Pe. 211.

Analysis of current curriculum offerings; principles on which curriculum reconstruction should be based; study of curriculum investigation.

*Ed. s335. **Public School Administration.** Five hours a week; three credits. This course is intended primarily for superintendents and principals. Prerequisite: Twelve credits in Education. Mr. Highsmith. 9 M. T. W. T. F. Pe. 208.

The following problems will receive consideration:

The powers and duties of the board of education; the powers and duties of the superintendent; the county-wide plan; consolidation of schools; transportation of pupils; school buildings and equipment; operation and maintenance of plant; janitor service; selection, purchase and distribution of supplies; school reports; problems pertaining to the teacher, pupil and home; educational problems of a county school system. Textbooks, lectures, readings and reports.

*Ed. s336. **Problems in Secondary Education.** Five hours a week; three credits. Prerequisite: Twelve credits in Education. Mr. Highsmith. 11 M. T. W. T. R. Pe. 206.

The purpose of this course is to give as practical assistance as possible to those men and women who wish to become or are now serving as high school principals in North Carolina. The following problems will be discussed:

Aims of secondary education; the curriculum (with special reference to

the North Carolina course of study) standards for high schools; classification of pupils; control of pupils; attendance; guidance of pupils; classroom standards; tests and examinations; marking system; directed study; class schedule making; duties of principals; supervision of instruction; selection of teachers; teaching load; salaries; textbooks, lectures, readings and reports.

*Educ. s337. **The Teaching of Geography.** Five hours a week; 3 credits. Prerequisite: Junior standing or teaching experience. Required for a certificate in science. Elective for others. Mr. Showalter. 9 M. T. W. T. F. Pe. 211.

The nature of geography; the place of geography in the curriculum; fundamentals of technique for teaching geography.

*Educ. s345. **Curriculum Materials in Physical Science.** Five hours a week. 3 credits. Elective. Mr. Showalter. 10 M. T. W. T. F. Pe. 211.

Survey of physical science with emphasis on recent developments and the generalizations that influence beliefs and attitudes.

Educ. s353. **Theory of Industrial Arts.** Five hours a week; 3 credits. Prerequisite: Twelve credits in Education. Mr. Boshart. 10 M. T. W. T. F. H. 16.

A study of the value and place of industrial arts in the public school. The correlation of industrial arts with other school subjects; the methods of teaching and supervision, and the study of industries, with the view of selecting suitable projects for class use. Primarily for teachers and supervisors.

*Educ. s354. **Practical Arts Problem.** Ten hours a week; 3 credits. Prerequisite: Twelve hours in Education and consent of the instructor. Mr. Boshart and Miss Bell. 2:30-4:30 M. T. W. T. F. H. 15.

A study of problems dealing with the selection and organization of suitable projects in industrial arts and the working out in detail of such as meet the needs of members of the class.

This course presents the craftsman's approach to the materials studied as wood, metal, leather, etc. Simple design construction and shaping of articles such as trays, bowls and decorative pieces; etching of copper and pewter; stamping and tooling of leather; block printing and stenciling.

Intended for teachers of industrial arts and instructors in camps such as C. C. C., Boy Scouts, and Girl Scouts. A small fee for supplies used.

*Educ. s355. **Art Studies in Industrial Arts Problems.** Five or ten hours a week. One and one-half or three credits. Prerequisite: Twelve credits in Education and consent of the instructor. Miss Bell. 9-11 M. T. W. T. F. H. 15.

Intended to aid teachers in illustrating their problems through the use of water color, crayons, clay, poster work, etching and designing. A small fee for supplies used.

Ed. s360. **Special Problems in Teaching Agriculture.** Five hours a week; three credits. Prerequisite: Twelve credits in Education, including Methods of Teaching Agriculture. Messrs. Cook and Armstrong. 9 M. T. W. T. F. Pe. 201.

This course will consider special problems in agricultural teaching and the preparation of teaching plans, involving the use of survey information. Each student will prepare a program of work for a specified community.

*Ed. s364. **History of Education.** Five times a week; three credits. Mrs. Wallace. 9 M. T. W. T. F. Pu. 8.

This course will include a brief study of European education and its influence upon the American public school, the early development of the elementary and high schools of America, and the present tendencies of our educational system. The period from 1890 to the present will be given special consideration.

*Education s381. **Guidance and Discipline of Students.** Five hours a week; three credits. Prerequisite: 12 credits in Education. Mr. Cook, assisted by Professor Bagby, Dean Bradshaw, Professor Crane, Professor Groves, and other guest lecturers. 9 M. T. W. T. F. Pe. 201.

A study of the needs for moral guidance and discipline; the responsibility of school teachers and administrators for the moral and civic conduct of their students; the nature of the problem, recent development, difficulties, agencies responsible; materials and procedures.

*Ed. s382. **Supervision—The Improvement of Instruction.** Five hours a week; three credits. Prerequisite: Eighteen hours in Education. Open to college graduates only. Mr. Highsmith. 10 M. T. W. T. F. Pe. 206.

For principals of high schools, heads of departments, supervisors and teachers.

The problems involved in the supervision of teachers; the planning and organization of supervision; the functions of supervision; rating of principals, supervisors, and teachers; classroom visitation and conferences; the improvement of teachers in the service.

Textbooks, lectures, readings, and reports.

Ed. s412. **Occupational Counseling.** Five hours a week; three credits. Prerequisite: Ed. 320, 327. Mr. Boshart. 12 M. T. W. T. F. H. 16.

Special attention is given to counseling as it may be applied in the junior and senior high schools, colleges, or placement offices, and the method of conducting individual interviews and group conferences. Information covering occupational material will be organized, evaluated, and applied to specific case studies. For teachers of experience and those familiar with personnel work.

Ed. s416. **Problems in Agricultural Teaching.** Five hours a week; three credits. Prerequisite: Ed. 203, 307, and at least 12 other credits in Education and Agriculture. Experience in agricultural teaching will be accepted in lieu of Ed. 307. Mr. Cook. By arrangement. Pe. 201.

Investigations, reports, and a critical evaluation of present practices with constructive remedies. The content of the course will depend on the interests and needs of the individual members of the class.

Ed. s421. **Research in Special Fields of Education.** Staff.

ENGINEERING

C. E. s102. **Surveying I.** Two sections: one section will run for three weeks, six days a week; the second section will run for six weeks, afternoons only. C. E. Building and field. Three credits. Mr. Mann, Mr. Tucker, Mr. Geile, and Mr. Bramer.

The use, care, and adjustment of surveying instruments; elementary land surveying, traverse lines, leveling, stadia measurements, topographical surveying, plane table surveying; office work in connection with field surveying.

C. E. s200. Mechanics. Six or twelve hours a week; three or six credits. Mr. _____. P. 102. Required of Engineering juniors. Prerequisite: Math. 203.

Either the first, second, third, or a combination of two, or all three terms may be taken. First term covers statics, concurrent, non-concurrent and parallel forces, friction, centroids, and moment of inertia. Second term covers kinetics, rectilinear and curvilinear, motion and rotation. Third term covers work, power, and energy.

E. E. s101. Electrical Engineering Fundamentals. Twelve hours a week; six credits. Mr. Fouraker.

This course covers the second and the third terms of the introductory course in Electrical Engineering. Electrical Engineering Problems: fundamental laws of electric, magnetic and dielectric circuits.

M. E. s102. Engineering Drawing. Twelve or twenty-four hours a week; three or six credits. Required of Engineering freshmen. Mr. _____. 8-10 or 8-12 M. T. W. T. F. S. P. 106.

Drawing-board work, covering lettering, orthographic projection, auxiliary projection, isometric projection, cabinet projection, intersection and development, working drawings and blue printing.

M. E. s103. Descriptive Geometry. Twelve hours a week; three credits. Mr. _____. 8-10 or 10-12 M. T. W. T. F. S. P. 106.

This work covers the representation of geometrical magnitudes, by means of points, lines, planes, and solids, and the solution of problems relating to them.

M. E. s107. Mechanical Drawing. Four, eight, or twelve hours a week; one, two, or three credits. Mr. Kolb. P. 106.

Drawing-board work, covering machine fastenings, pipe fittings, elementary cams, technical sketching, working drawings, tracing and blue printing.

M. E. s108. Metallurgy. Four, eight, or twelve hours a week; two, four, or six credits. Reuired of Sophomores in Mechanical Engineering. Prerequisite: Chem. 101. Mr. Kolb. P. 102.

Study of ferrous metals and their alloys; mining, smelting, refining, shaping, and heat-treating.

ENGLISH

Eng. s101. Rhetoric and Composition. Five hours a week; three credits. Mr. Harrison. 8 M. T. W. T. F. Pu. 104.

Readings and exercises in types of composition; weekly themes; one long term paper; collateral readings; conferences.

Eng. s130. Technical Writing. Five hours a week; three credits. Mr. Harrison. 10 M. T. W. T. F. Pu. 104.

Principles of writing reports and other technical papers; illustrative readings; frequent short papers; a term paper; conferences.

Eng. s202. Advanced English Grammar. Five hours a week; three credits. Mr. Ladu. 9 M. T. W. T. F. Pu. 105.

The science of grammar and its functional usage; forms, inflections, and idioms.

Eng. s221. Survey of American Literature. Five hours a week; three credits. Mr. Ladu. 10 M. T. W. T. F. Pu. 105.

A study of the masterpieces and outstanding types of American literature in their historical settings, together with a critical examination of the development of American thought in connection with its European background.

***Eng. s320. The Short Story.** Five hours a week; three credits. Mr. Harrison. 11 M. T. W. T. F. Pu. 104.

Development, structure, types, and style of the present-day short story; writing narratives of fact and of fiction; conferences.

Eng. s337. Contemporary American Literature. Five hours a week; three credits. Mr. Ladu. 11 M. T. W. T. F. Pu. 105.

A study of the leading writers of the present century, and an attempt to interpret their works against the social background of the period.

FIELD CROPS

F. C. s1. Cotton Classing. Twenty hours a week for six weeks. No college credit. Mr. Darst, Mr. Cotner. 9-1 M. T. W. T. F. Pt. 45.

The Summer School of Cotton Classing offers an intensive course in the grading and stapling of cotton.

The course will consist of lectures and daily practice in grading and stapling cotton samples according to the "Universal Cotton Standards."

The course will be given each day, with the exception of Saturday, for four hours a day.

The first period of each day will be devoted to lectures and discussions, and the remaining time will be used in the actual practice of grading and stapling cotton.

All the instruction in classing will be done by men holding a Federal Cotton Classing license.

The Cotton Classing course is designed for a special group, and does not carry collegiate credit. There is a flat charge of $27.50 for the whole course in Cotton Classing. Persons registered for fifty per cent or less of the course will be charged $15.00. All fees are to be paid on or before registration.

A Cotton Classing certificate will be issued by the College to those satisfactorily completing the six weeks course.

The school has been serving the State and neighboring states for fourteen years. The school has international recognition, as men from the following countries have taken the course: South America, India, China, South Africa, Belgium and Germany.

Persons expecting to attend this course should notify Dr. J. B. Cotner, State College Station, Raleigh, N. C.

F. C. s201. Cereal Crops. Prerequisite: General Field Crops. Five hours a week; three credits. Mr. Darst, Mr. Cotner. 11 M. W. F.; 11-1 T. Th. Pt. 26.

Lectures and recitations in history, production, cultivation, improvement, harvesting, storage, and marketing. Laboratory consists of structural studies, seed judging, variety identification, and commercial grading. Special problems in cereal production.

F. C. s210. Cotton Production, or s215. Tobacco Production. Five hours a week; three credits. Mr. Cotner. 8 M. T. W. T. F. Pt. 45.

Lectures and recitations on history, production, adaptation, types and varieties, including cultivation, harvesting, grading, and marketing, will be

given. Laboratory consists of variety studies, the classing of cotton, and the grading of tobacco.

F. C. s225. Cotton Classing II. Three credits. Mr. Cotner. 9-11 or 11-1.

Required of sophomores in Textile Manufacturing, Chemistry and Dyeing, and Designing.

A study of the universal standards of American upland cotton for grade and staple. Factors that determine grade and their relative value. Practice will consist of classing and stapling three to five thousand samples of cotton.

F. C. s302. Advanced Cotton Classing. Three credits. Mr. Cotner. 9-11 or 11-1. Prerequisite: F. C. 101 or 105, 225, or 220.

For men who expect to become specialists in cotton classing. This course will prepare men to take the U. S. Civil Service examination for cotton classing.

F. C. s330. Advanced Seed Judging and Grading. Prerequisite: Cereals. Five hours a week; three credits. Mr. Darst, Mr. Cotner. 12 M. W. F. 2-4 T. Th. Pt. 26.

Lectures and practice in planning, arranging and judging field crops exhibits. Study of the Federal grain and hay standards. A course planned to develop experts in the judging of field crop seeds and in the grading of grain and hays. A course designed for agricultural extension workers and vocational teachers.

F. C. s351. Advanced Study of Crops Research. Undergraduate credits, 3-9; Graduate credits, 2-6. Elective for graduates and advanced undergraduates. Mr. Darst, Mr. Cotner. By arrangement. Pt. 26.

A field study of the research work and demonstration work in crops. This course will be based directly upon experimental work in progress.

The crop or crops for study will be agreed upon by the class.

F. C. s401. Crop Research. Three credits. Prerequisite: Eighteen credits in F. C. By arrangement. Mr. Darst, Mr. Cotner.

A study of special problems and methods of investigation. A student may select a problem in any phase of crop production.

F. C. s415. Plant Breeding Research. Three credits. Prerequisite: F. C. 345. By arrangement. Mr. Cotner.

Inheritance problems of the plants. Available during any season appropriate to the study of the particular crop.

GEOLOGY AND PHYSICAL GEOGRAPHY

Geol. s101. Earth History. Five hours a week; three credits. Mr. Stuckey. 9 M. T. W. T. F. Pr.

Open to both college students and teachers who are interested in a better understanding of the world about them.

An introductory course in general geology dealing with the changes which have taken place in the earth and the physical and life processes which have brought about these changes. The first half of the course deals with the processes of physical and dynamical forces while the second half deals with the historical development of the earth as it has been affected by those forces and by life processes.

Geol. s105. Physical Geography. Three lectures; four hours laboratory and field work; three credits. Equivalent to the regular course in physical geography given in the third term of the college year. Mr. Stuckey. 10 M. T. W. T. F. Pr.

The course is intended to give those interested in general science and in teaching a better appreciation of physical geography. It will include an account of the earth as a planet; the atmosphere; the development of winds and rain; changes in the earth's crust; and the development of relief features and physiographic provinces.

The work of running water, ground water, wind, snow and ice, and forces within the earth as they affect the relief features will be taken up in some detail.

The course will also include a brief consideration of the physical geography of North Carolina.

Geol. s120. Physical Geology. Three lectures; four hours laboratory and field work; three credits. Mr. Stuckey. 8 M. W. F. Laboratory by arrangement. Pr.

Physical Geology as related to forces acting on and in the earth, and materials of the earth's crust.

Geol. s291. Geology of North Carolina. Three lectures; four hours laboratory; three credits. Mr. Stuckey. 12 M. W. F. Laboratory by arrangement. Pr.

Elective for students in the Schools of Engineering and Science and Business who have had Geol. 101 or 120.

Also open to teachers who are interested in the geology of North Carolina and who may be interested in helping students to collect and assemble groups of the common rocks and minerals from different sections of the State.

The course will cover the physical geography, general geology, common rocks and minerals, and mine and quarry products of the State.

HISTORY

Hist. s101a. American Economic History. Five hours a week; three credits. Mr. Barnhardt. 8 M. T. W. T. F. Pu. 6.

Discovery, colonization, economic background of the Revolution, government foundations, wars, presidential administrations, public lands, public finance, agriculture and industry.

Hist. s101c. Commercial Geography (Commercial and Industrial). Five hours a week; three credits. Mr. Barnhardt. 11 M. T. W. T. F. Pu. 6.

This course is designed to prepare teachers of geography in the high schools as provided for in the plan of High School Reorganization as well as for students in the School of Science and Business. Geographical conditions affecting industries, production and commerce of the world; development and relations of commercial areas to location and availability of resources; markets and transportation routes.

Hist. s201b. Modern European History. Five hours a week; three credits. Mr..... 10 M. T. W. T. F. Pu. 6.

The political and social history of Europe from 1789 to 1870. A survey of the French Revolution and Napoleon; the era of Metternich; democratic reforms and revolution; the Industrial Revolution; and the growth of nationalism in 1870.

Hist. s201c. Contemporary Europe. Five hours a week; three credits. Mr. Barnhardt. 9 M. T. W. T. F. Pu. 6.

This course deals with the economic, social, and political developments in Europe from 1870 to the present time. Special emphasis is laid upon the causes of the World War. The war is studied in outline and attention is given to post-war conditions.

Hist. s209. American Government. Five hours a week; three credits. Mr. Lefler. 10 M. T. W. T. F. Pu. 6.

This course gives a survey of the historical development, the constitution, the organization, powers, and the actual operations of our national government. Special emphasis is given to present day conditions and movements in our government and political life.

***Hist. s302. Recent U. S. History 1865-1914.** Five hours a week; three credits. Prerequisite: History 101. Mr. Lefler. 12 M. T. W. T. F. Pu. 5.

Reconstruction following the Civil War, development of West and South, transportation, rise of big business and organized labor, political parties, movements for reform, the free silver movement, war with Spain, American expansion, rise of the Progressive Party; the World War.

***Hist. s303. History of North Carolina.** Five hours a week; three credits. Prerequisite: History 101. Mr. Lefler. 11 M. T. W. T. F. Pu. 6.

The purpose of this course is to give the teachers of North Carolina and others a general view of the political, economic, and social development of North Carolina from colonial beginnings to the present day. A brief survey will be made of the settlement of North Carolina, the various racial groups which colonized, agriculture, industry, and commerce in the colonial era, and the relations of the province to England. A more detailed study will be made of North Carolina between the Revolution and the Civil War, emphasis being given to North Carolina and states' rights, social conditions, slavery and the free Negro, agriculture and industry, and the beginnings of public school education. Particular emphasis will be placed on the recent development of the State, the rise of textile, tobacco, and other industries, the development of agriculture, public schools and higher education, good roads, and other factors in recent North Carolina progress.

Hist. s322. Contemporary American History, 1914-1935. Five hours a week; three credits. Mr. Lefler. 8 M. T. W. T. F. Pu. 5.

America in the World War, post war problems, political, social, and economic affairs to the present day, including study of the New Deal.

HORTICULTURE

Hort. s102. Plant Propagation and Nursery Practice. Three credits. Mr. Randall. By arrangement.

Study of methods and practice in seedage, cuttage, separation and division, budding and grafting. Cultural principles and practices in growing nursery stock.

Hort. s105. Small Fruit Culture. Three credits. Mr. Gardner. By arrangement.

A course in the culture and production of small fruits including strawberries, dewberries, blackberries, blueberries, raspberries, currants and grapes.

Hort. s209. Vegetable Production. Three credits. Mr. Randall. By arrangement. Pk. 308.

Location, soil preparation, fertilization, irrigation, and general culture applicable to commercial vegetable production.

Hort. s228. Home Floriculture. Three credits. Mr. Randall. By arrangement. Pk. 308.

Principles and methods of growing garden flowers and house plants, including varieties and their adaptability.

There will be the equivalent of two lectures and one two-hour laboratory for each of the above courses.

LANDSCAPE ARCHITECTURE

L. A. s203. Plant Materials. Two credits. Mr. Weaver. By arrangement.

Ornamental plants, their characteristics of use in planting design for home, school and church grounds, and farmstead landscapes.

L. A. s217. Annual and Herbaceous Plants. Two credits. Mr. Weaver. By arrangement.

Herbaceous and annual plants, their height, habits of growth, texture, season, color and other characteristics determining use in planting design.

MATHEMATICS

Math. s100-a. Mathematical Analysis. Five hours a week; three credits. Prerequisite: Algebra to quadratics and Plane Geometry. Mr. Fisher. 11-12 M. T. W. T. F. Page 209.

Review of elementary topics such as factoring, fractions, simple equations, exponents and radicals. Topics then taken up are: quadratic equations, solution of higher degree equations, simultaneous quadratic equations, logarithms, the binomial theorem and the elementary theory of probability.

Math. s100-b. Mathematical Analysis. Five hours a week, three credits. Mr. Fisher. 11-12 M. T. W. T. F. Page 209.

The study of trigonometric functions with their applications to the solution of the right and oblique triangles, with numerous problems. Also a brief study of trigonometric equations and identities, and inverse functions.

Math. s100-c. Mathematical Analysis. Five hours a week, three credits. Mr. Williams. 9-10 M. T. W. T. F. Page 101B.

Simple and compound interest, annuities, sinking funds and amortization and valuation of bonds, and other applications.

Math. s101. Algebra. Twelve hours a week, six credits. Mr. Mock. 8-10 M. T. W. T. F. S. Page 203.

Progressions, binomial theorem, undetermined coefficients, logarithms, compound interest and annuities, permutations and computations, the general theory of equations, and the solution of higher equations.

Math. s102. Trigonometry. Twelve hours a week, six credits. Mr. Mock. 8-10 M. T. W. T. F. S. Page 203.

Definitions of trigonometric functions, derivations of formulae, solution of plane and spherical triangles, and the solution of many practical problems.

Math. s103. Analytical Geometry. Twelve hours, six credits. Prerequisite: Mathematics 101 and 102. Mr. Mumford. 11-1 M. T. W. T. F. S. Page 101A.

Loci of equations, the straight line, circle, parabola, ellipse, hyperbole, and the general equation of the second degree.

Math. s201. Differential Calculus. Ten hours a week, five credits. Prerequisite: Mathematics 103. Mr. Williams. 11-1 M. T. W. T. F. Page 101B.

An elementary course on the fundamental principles of the Calculus, including the development of the formulae for differentiation with their application to the problems in rates, maxima and minima, etc.

Math. s202. Integral Calculus I. Ten hours a week, five credits. Prerequisite: Mathematics 201. Mr. Williams. 11-1 M. T. W. T. F. Page 101B.

Methods of integration, the study of the definite integral with applications to problems in areas, volumes, surfaces, and lengths of arcs.

Math. s203. Integral Calculus II. Ten hours a week, five credits. Prerequisite: Mathematics 202. Mr. Fisher. M. T. W. T. F. Page 209.

Centroids, radii of gyration and moments of inertia, problems in work and liquid pressure, double and triple integrals, infinite series, hyperbolic functions, and differential equations.

***Math. s341. The Teaching of High School Mathematics.** Ten hours a week; five credits. Prerequisite: Ed. 101, 203, 212, 213 and 20 credits in Mathematics. Mr. Mumford. 11-1 M. T. W. T. F. P. 101B.

A comprehensive view of the materials of high school mathematics will be accompanied by a discussion of the selection and use of textbooks and supplementary helps. Practice will be given in the construction and use of written examinations, and the comparative merits of standard tests will be considered. Attention will be given to adapting both the content and the methods of procedure to the needs of various groups.

[1]MODERN LANGUAGES

German

M. L. s108. Elementary German Prose. Five hours a week; three credits. Mr. Hinkle. 10 M. T. W. T. F. Pe. 212.

This course is intended for students who have had little or no previous training in German as well as those who may wish to review the elements of German grammar and pronunciation. It consists of reading and translation with the elements of grammar. Practice in the pronunciation and understanding of German is given by means of dictation and oral practice.

M. L. s109. Introductory Scientific German. Five hours a week; three credits. Mr. Hinkle. 10 M. T. W. T. F. Pe. 212.

This is a reading translation course in scientific German literature. A great deal of attention is given to the study and analysis of German scientific constructions, and a basis is laid for the development of a scientific vocabulary. Open to students who have had two years of high school German or one year of college German.

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[1]NOTE.—Courses in this department may be taken for double credit by arrangement with the teacher concerned and the approval of the Dean of Administration.

Other regular college credit courses may be substituted for the ones here offered in case of sufficient demand.

M. L. s210. Elements of Language. Five hours a week; three credits. Mr Hinkle. 11 M. T. W. T. F. Pe. 212.

The object of this course is to acquaint the student with the various phases of linguistic growth for the purpose of providing a basis for the intelligent study and teaching of languages. Such problems as the origin of language, linguistic change, grammatical categories, dialects, standard language, word order, inflection, etymology, and other linguistic processes are studied. The discussions are adapted to the needs of language teachers as well as language students.

French

M. L. s107. Elementary French Prose. Five hours a week; three credits. Mr. Hinkle. 9 M. T. W. T. F. Pe. 212.

This course consists of the elements of grammar with readings and translations based upon selections from representative modern French authors. Rapid reading and sight translation are stressed.

M. L. s211. Conversational French. Five hours a week; three credits. Mr._____. 8 M. T. W. T. F. Pe. 212.

This course is essentially a practice course in French reading and pronunciation. Much attention is given to the use of idiomatic construction and to training the ear to understand the spoken language. Its aim is to acquaint the student with the ordinary uses of the language.

Spanish

M. L. s111. Elementary Spanish. Five hours a week. Three credits. Mr. _____. 12 M. T. W. T. F. Pe. 211.

This course is intended for students who have had little or no previous training in Spanish. It consists of reading and translation with the elements of grammar. Practice in the pronunciation and the understanding of Spanish is given by means of dictation and oral practice.

PHYSICAL EDUCATION

P. E. s111. Games and Organized Play. Three hours theory, two hour practice; two credits. Mr. Miller. By arrangement. Gym.

Games suitable for the playground, elementary and secondary schools, ranging from the simplest primary school games to organized games such as volleyball, soccer and tag football, playground ball and dancing. The organization and administration of playgrounds will be stressed. Mr. Miller will teach the men's section and Miss Crow will teach the women's section.

P. E. s114. Football-Theory and Practice. Five hours theory, three hour practice; three credits. Mr. Miller. By arrangement. Gym.

This course will cover the rules, equipment, schedule making, individual position play, individual technique, comparisons of offensive and defensive systems, training and conditioning.

P. E. s115. Basketball-Theory and Practice. Five hours theory, three hour practice; three credits. Mr. Miller. By arrangement. Gym.

The content of this course is similar to PE s114.

NOTE.—P. E. s101 and P. E. s102, Fundamental Activities and Sports Activities, the required courses for freshmen and sophomores, will be given if there is demand. Regular students who are behind in their requirement may make it up.

PHYSICS

Physics s110. General Physics and Physics for Textile Students. Four or eight credits. Five hours class work, one 2½ hours laboratory each week for four credits. Double this for eight credits. Staff. 9 M. T. W. T. F. 2-4 Tu.; 9-11 M. T. W. T. F.; 2-4 T. T. P. & E. 113.

A course covering the whole field in condensed form. It is especially designed for high school teachers, containing method as well as subject matter. The materials discussed give a broad background of additional subject matter with which to supplement a like course given in high school. It is given in halves taken simultaneously. At nine, force and machines, heat and weather, sound and the physics of music are given. At ten, light and the general field of electricity and the electrical nature of matter are given. Either half may be taken and four college credits earned, substituting for the corresponding term of Physics 101. Two afternoons of laboratory accompany each half.

Physics s104. Five or ten credits. Mr. Staff. 8 M. T. W. T. F.; 2-4 M. W.; 8-10 M. T. W. T. F.; 2-4 M. T. W. T. F. P. & E. 212.

An advanced treatment of General Physics. First, second, or third terms work may be taken or any two terms taken simultaneously.

Physics s107. Descriptive Astronomy. Five hours a week; three credits. Mr. Heck. 12 M. T. W. T. F. P. & E. 212.

A descriptive course covering the most interesting elements in the study of the sun and planets and the stars. The modern interpretation of the universe as a whole given in this course makes it valuable as a background to a student or teacher of any subject. Observation periods, using the telescope on top of the physics building, will be substituted at times for class lectures.

***Physics s312. Photography.** Three credits. Four hours class work and two laboratory periods each week. Mr. Meares. 11 M. T. W. T. Laboratory by arrangement.

A general course in photography covering cameras and lenses; principles of exposure, development and printing; lantern slides, micro-photography, projection printing and color photography.

Physics s411. Research.

Graduate courses in physics will be given if there is sufficient demand.

POULTRY SCIENCE

Poul. s303. Poultry Nutrition. Three credits. Mr. Williams or Mr. Dearstyne. By arrangement. R. 208.

This course covers the fundamentals of poultry feeding, physiology of digestion, utilization of home grown feeds, finishing of capons and broilers.

Poul. s305. Poultry Diseases. Three credits. Mr. Gauger or Mr. Dearstyne. By arrangement. R. 208.

A study of the diseases of poultry and of parasitic infestations; sanitation in relation to disease prevention; special stress on autopsy work.

Poul. s311. Advanced Poultry Production. Three credits. Mr. Dearstyne, Mr. Williams. By arrangement.

An advanced course in Poultry Production, including a study of Breeding, Nutrition and Common Diseases.

SOCIOLOGY

Soc. s102. Introductory Sociology. Five hours a week; three credits. Mr. Winston. 11 M. T. W. T. F. Pu. 8.

This course offers an inductive introduction to the field of sociology by taking up a number of social problems which are already somewhat familiar to every one. These problems confront every community and our general citizenry. The outstanding problems to be considered are: poverty, crime, divorce, immigration, population and race problems. This course, therefore, is a natural introduction to the sociology courses, which deal more directly with social theory.

Soc. s103. General Sociology. (1st term.) Five hours a week; three credits. Mr. Winston. 10 M. T. W. T. F. Pe. 108.

The course deals first with the basic principles of sociology, then analyzes society and its influence on human behavior.

***Soc. s301. Social Pathology.** Five hours a week; three credits. Prerequisite: Soc. 103. Mr. Winston. 9 M. T. W. T. F. Pe. 108.

The course gives primary attention to the problems of adjustment resulting from the complexities of modern life. In the Summer Session, it is particularly adapted to the behavior problems of children which teachers face in their work.

***Soc. s306. The American Family.** Five hours a week; three credits. Prerequisite: Soc. 103 and three additional term credits in Sociology. Mr. Winston. 8 M. T. W. T. F. Pe. 108.

A study of family relationships, of the relationship between husband and wife, parents and children, with particular emphasis on the development of personality. The effect of present-day social changes upon the family and the changes in family life as a result will be studied. Discussion of various efforts to stabilize the family. The part habits play in successful and non-successful marriages will also be discussed.

SOILS

Soils s220a. Soil Geography of the United States. Five periods a week; three credits. Mr. Clevenger. 8 M. T. W. T. F. Pt. 16.

A course dealing with the characteristics and distribution of the soil groups of the United States and their influences on the agricultural, grazing and forest industries of the country.

Soils s310. Fertilizers. Four hours of class and one laboratory period a week; three credits. Mr. Clevenger. 10 M. T. W. T. Laboratory to be arranged. Pt. 16.

A study of the sources, characteristics and utilization of fertilizers.

Soils s315. Soils of North Carolina. Four hours of class, one laboratory period a week; three credits. Mr. Clevenger. 11 M. T. W. T. Laboratory to be arranged.

A study of the origin, characteristics, distribution and utilization of North Carolina soil types.

Soils s319. Fertilizer Experimentation. Three credits. Mr. Lutz. By arrangement.

A study of methods or determining the fertilizer needs of different crops on different soil types.

Soils s430. Soil Research. Two to five credits. Mr. Clevenger and Mr. Lutz. By arrangement.

TEXTILES

Tex. s102. Yarn Manufacture I. Three credits. Mr. Hilton. By arrangement. Textile Building.

Mixing of cotton, description and setting of openers, pickers, and cards. Production, speed and draft calculations.

Tex. s103. Yarn Manufacture Laboratory I. One or two credits. Mr. Hilton. By arrangement. Textile Building.

Operation and fixing of machines. Grinding and setting cards.

Tex. s104. Knitting I. Three credits. Mr. Lewis. By arrangement. Textile Building.

Selection and preparation of knitting yarns, knitting mechanisms, plain and rib knitting machines, circular ribbers, and circular automatic machines.

Tex. s105. Kniting Laboratory I. One, two, or three credits. Mr. Lewis. By arrangement. Textile Building.

Operation of machines, practical experiments, hosiery analysis, topping, transferring and looping.

Tex. s106. Fabric Structure and Analysis. Two, four, or six credits. Mr. Lewis. By arrangement. Textile Building.

Systems of numbering woolen, worsted, silk, linen, rayon, and cotton yarn. Plain, twill, and sateen weaves. Ornamentation of plain weaves; wave designs; pointed twills; diamond effects; plain and fancy basket weaves; warp and filling rib weaves.

Analyzing plain, twill, sateen, and other fabrics made from simple weaves, ascertaining the number of ends and picks per inch in sample. Fabric analysis calculations.

Tex. s107. Power Weaving. Two credits. Mr. Nelson. By arrangement. Textile Building.

Construction of auxiliary motions on plain looms. Cams and their construction. Drop-box loom construction. Methods of pattern chain building. Construction and value of pattern multipliers. Timing of drop-box motion, and other studies.

Tex. s108. Power Weaving Laboratory. One or two credits. Mr. Hart. By arrangement. Textile Building.

Operating and fixing of plain, automatic and drop-box looms. Pattern chain building for drop-box looms.

Tex. s115. Textiles for Teachers. Five hours a week; three credits. Mr. Nelson. 8 M. T. W. T. F. Textile Building.

This course is designed to give a fundamental knowledge of fabrics. It will include a study of various fabrics and their selection and adaptability to different uses. Various methods of distinguishing fabrics made from different materials such as cotton and rayon, cotton and wool, wool and silk, and other combination of yarns will be given and analysis made of the fabrics. In addition, a general survey of the various processes through which cotton passes in its transition from the raw material to the finished product will be studied.

Tex. s201. Yarn Manufacture II. Three credits. Mr. Hilton. By arrangement. Textile Building.

Construction of draw frames; sliver lapper; ribbon lapper, comber; mechanical and electrical stop motions, description and setting of the different parts; weighting of rolls; types of roll covering; care of machines; fly frame builder and differential motions.

Tex. s202. Yarn Manufacture Laboratory II. One, two, or three credits. Mr. Hilton. By arrangement. Textile Building.

Operation and fixing of draw frames; sliver lappers; ribbon lapper; comber and fly frames. Changing of hank roving and the setting of rolls and speeder motions.

Tex. s205. Fabric Design and Analysis I. Three or six credits. Mr. Hart. By arrangement. Textile Building.

Construction of fancy weaves, such as broken twills, curved twills, entwining twills, granite weaves. Imitation leno; honeycomb weaves; fabrics backed with warp or filling; fabrics ornamented with extra warp or filling; combining weaves together to produce new patterns.

Analyzing samples of fancy fabrics for design, drawing in draft, reed, and chain plan. Calculating particulars to reproduce fabric from data obtained from sample.

Tex. s207. Dobby Weaving. Three credits. Mr. Nelson. By arrangement. Textile Building.

Methods of drawing in and starting up cotton and rayon warps. Setting of harness shafts. Selection of springs or spring jacks. Construction and methods of fixing single and double index dobbies. Methods of pattern-chain building.

Tex. s208 or s209. Dobby Weaving Laboratory I or II. One, two, or three, or six credits. Mr. Hart. By arrangement. Textile Building.

Preparation of warps for weaving cotton and rayon fabrics on dobby looms; starting up warps in looms; fixing single and double index dobbies; pattern chain building; operation of dobby looms.

Tex. s301. Yarn Manufacture IV. Three credits. Mr. Hilton. By arrangement. Textile Building.

Spinning; spooling; twisting. Description and setting of different parts. Builder of motions for warp and filling. Bobbin holders, thread guides, traverse motions. Ply yarns. Calculations for twist, speed and production.

Tex. s309. Cotton and Rayon Fancy Design I. Three, six, or nine credits. Mr. Nelson. By arrangement. Textile Building.

Designing fancy and jacquard fabrics. These fabrics include tablecloths, figured double plain; matelasse, velvet, corduroy. Leno weaves with one, two, or more sets of doups. Combinations of plain and fancy weaves with leno. Methods of obtaining leno patterns. Methods of making original designs by combinations of color, weave, and sketches. Designs for table napkins, table covers, dress goods, draperies.

ZOOLOGY

Zool. s101. General Zoology. Five recitations, four hours laboratory. Four credits. Mr. Mitchell. 9 M. T. W. T. F. Laboratory arranged. Z. 7.

A study of the structures and functions of the vertebrates with special reference to man and the rat.

Zool. s102. General Zoology. Five recitations, four hours laboratory. Four credits. Mr. Bostian. 10 M. T. W. T. F. Laboratory arranged. Z. 8.

A review of the groups of animals with special reference to those of economic importance.

Zool. s103. Human Physiology. Five recitations, four hours laboratory. Three credits. Mr. Bostian. 8 M. W. F. Laboratory arranged. Z. 8.

A study of the functions of the human body, designed especially for teachers.

Zool. s204. Economic Entomology. Five recitations, four hours laboratory. Four credits. Mr. Mitchell. 8 M. W. F. Laboratory arranged. Z. 7.

A general study of the insects, including their economic importance, with emphasis upon control of the more important local species.

Zool. s220. Animal Nature Study. Five recitations, four hours laboratory. Three credits. Mr. Metcalf. 9 M. W. F. Laboratory arranged. Z. 201.

A study of the common birds, animals and insects with special reference to presenting this material for grade school teachers.

Courses for Graduates Only

Zool. s401. Systematic Entomology. 3 credits. Mr. Metcalf, Mr. Mitchell. By arrangement. Prerequisite: Zool. 307 or equivalent.

A thorough discussion of codes of nomenclature, methods of writing descriptions, constructing keys, determining priority, selecting and preserving types, and making bibliographies and indexes. The student may select some special group of insects for detailed study.

Zool. s403. Research in Zoology. Three credits. Mr. Metcalf, Mr. Mitchell, Mr. Bostian. By arrangement. Prerequisite: Eighteen term credits in Zoology.

The student will be assigned a problem in development morphology, ecology, physiology, genetics or taxonomy.

COURSES OFFERED AT THE UNIVERSITY OF NORTH CAROLINA, CHAPEL HILL, FOR THE SECOND SESSION, JULY 25-AUGUST 31

In addition to the first term of the Summer Session at Chapel Hill, Greensboro and Raleigh, a second term of six weeks, from July 25 to August 31, will be provided at Chapel Hill, with regular work in Botany, Chemistry, Economics, Commerce, Education, English, Geology, German, History, Government, Latin, Library Science, Mathematics, Music, Physics, Psychology, Public Administration, French, Spanish, Rural Social Economics, and Sociology. Graduate work, both academic and professional, will be offered in all of these departments. The second session at Chapel Hill has been so arranged that students in the first session at the Woman's College in Greensboro and at State College in Raleigh may continue their work for another six weeks without interruption or loss.

Information regarding the second term of the Summer Session at Chapel Hill will be furnished by Dean R. B. House, Chapel Hill. Students desiring to take graduate work during the second term there should write to Dean W. W. Pierson, Chapel Hill.

STATE COLLEGE RECORD

VOL. 35 FEBRUARY, 1936 No. 3

Summer Session

JUNE 10—JULY 21, 1936

Announcement of Courses

NORTH CAROLINA STATE COLLEGE
OF
AGRICULTURE AND ENGINEERING
OF THE
UNIVERSITY OF NORTH CAROLINA

STATE COLLEGE STATION

RALEIGH

PUBLISHED MONTHLY BY THE NORTH CAROLINA STATE COLLEGE
OF AGRICULTURE AND ENGINEERING

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SUMMER SESSION, 1936

In accordance with the plans that are being carried out in the consolidation of the Greater University of North Carolina, the summer sessions of the University at Chapel Hill, of the State College of Agriculture and Engineering at Raleigh, and the Woman's College at Greensboro have been united into one organization. The summer terms are conducted as an integral part of the regular college year under the guidance of the regular administrative staffs.

The work of the three divisions will be arranged according to function. Elementary Education will be the distinctive field of work at Greensboro; Agricultural, Vocational, and Technological training at State College; and Secondary Education and Graduate work the distinctive field at Chapel Hill.

There will be a single session of six weeks at all three of the institutions, with a second term of six weeks at Chapel Hill only. The work of the three institutions is being correlated and coördinated in such a way that the students and teachers of the State may be better served than hitherto.

The twenty-third Summer Session of the North Carolina State College of Agriculture and Engineering of the University of North Carolina begins Wednesday, June 10th, and closes Tuesday, July 21st.

COLLEGE CREDIT

Beginning with 1924-1925, the regular session of State College was divided into three terms; consequently "credit," as used throughout this bulletin, refers to term credit, or twelve weeks work, unless otherwise designated. Therefore, in order for the college-credit courses to count for a full term's work, they will be given, if for five credits, ten periods a week; if for three credits, five periods a week. Since, however, no student will be allowed to take more than eighteen hours of work per week without special permission, this restriction will prevent students taking more than one ten-period course.

It is important to notice that teachers are required to take at least fifteen hours weekly in order to receive credit for one summer session. Additional credits may be taken by students if they have points to justify, and by teachers upon approval. In no case will a student be allowed more than twelve credits of work.

AUDITORS

Students not carrying a full load, and others who receive permission, may audit classes by paying a $5.00 fee for each class attended. This does not permit the individual to receive credit for the course, and he is not permitted to take part in class discussions or receive any individual assistance from the teacher.

ADMISSION OF WOMEN

A recent ruling of the Board of Trustees does not allow this institution to accept women students until they have completed a minimum of forty-eight semester hours at some other college. It will therefore be necessary for women students to present credentials on or before registration day indicating they have the required amount of advance standing.

DEGREES IN EDUCATION

No degrees in Education will be awarded after July, 1938, except in Agricultural Education and Industrial Arts Education. Teachers planning to receive their degrees at this institution in other fields of Education should arrange to complete their work by that time.

TEACHING CERTIFICATES

We have received the following information from the Division of Certification of the State Department of Public Instruction which will be of interest to all teachers attending summer school to raise their certificates:

"As of July 1, 1939, and thereafter, the Class A Certificate built up from a lower grade certificate will be based upon a satisfactory completion of the requirements for a degree from a standard college, along with, or in addition to, the specific certificate requirements. It is suggested that those teachers in service who may not reasonably be expected to qualify for the Class A Certificate prior to July 1, 1939, arrange their program of studies in coöperation with the institution from which they would like to obtain the degree."

FEES AND EXPENSES FOR SIX-WEEKS PERIOD

All fees and other charges are payable in advance or upon registration, and all checks should be payable to North Carolina State College.

Room Rent (per person)	$ 7.50
Board at College Cafeteria (estimate)	30.00

College Fees

Registration Fee	$ 3.00
Course Fee (for each quarter hour of credit)	3.00

All students occupying a room alone will be charged $10.00.

There will be a key deposit of twenty-five cents, which amount will be refunded when the key is returned.

BOARD

The College maintains an excellent cafeteria where charges are reasonable. Students can purchase meal tickets at a reduced rate, so that board for the six-weeks period will be approximately $30.00.

ROOMS

Students will be assigned to rooms upon their arrival at the College. In case it is desired to change the room assignments, permission to do so must first be obtained from the Superintendent of Buildings. In no case may a room be taken until it has been regularly assigned.

The College rooms are supplied with necessary furniture. Each student, however, should bring towels, sheets, one pillow and two pillowcases, and two bedspreads for a single bed.

REGISTRATION

All registrations will be conducted in Frank Thompson Gymnasium beginning at 9 a.m. on June 10th. Students are expected to report in person on Wednesday, June 10th, so that they may begin class work on the morning of Thursday, June 11th, at 8 o'clock. Deans and Directors of Instruction will be present to advise students relative to courses. The administration reserves the right to cancel any course for which the registration is less than eight.

DIPLOMAS

Students expecting to receive a degree at the end of the summer session should come to the Office of Registration early in the session, to be sure they are meeting all the requirements for graduation.

LIBRARY FACILITIES

In addition to the resources of the D. H. Hill Library, the facilities of the Olivia Raney Library and the State Library will be available to Summer School students for reference work.

SOCIAL AND RECREATIONAL FACILITIES

A reception for students and faculty, followed by other social and recreational events, serve to foster a congenial spirit in the student body. Weekly assembly periods with varied and interesting programs; voluntary student musical organizations; a weekly open forum for the discussion of timely subjects; the social center at the Y. M. C. A.; weekly dances; and supervised recreation, consisting of swimming, tennis, baseball, volleyball, basketball, and handball, provide a wide range of recreational activities.

Being the capital of one of the original thirteen states, Raleigh is unusually rich in historical collections, fine public buildings, and interesting places and memorials. It is interesting, also, for its churches, its schools, its hotels, its office buildings, and its growing commercial and industrial activities. Opportunities will be given the students to visit the places of interest.

The various churches welcome all Summer School students to Sunday school and church services, and their pastors have taken a very friendly interest in the morning services at the College auditorium. Raleigh will be found in all respects a delightful place of residence.

MEETING OF TEACHERS OF AGRICULTURE AND YOUNG TAR HEEL FARMERS

The annual conference of North Carolina teachers of vocational agriculture will be held June 29, 30, and July 1, 1936.

The annual meeting of Young Tar Heel Farmers will be held at N. C. State College July 2 and 3, 1936.

SPECIAL SHORT COURSES

During the summer the College offers several short courses. These courses are designed to be of practical value to people already employed in particular fields of work.

The total cost of any of these short courses, including cost of registration and room rent, will not exceed $3.00. Board is not furnished, but can be secured at the College Cafeteria.

For the summer of 1936 the North Carolina State College is offering the following short courses. Others will be offered in future summer schools whenever there are sufficient demands. These courses do not give college credit.

Short Course for Janitors and Firemen—August 3-10, 1936

The Mechanical Engineering Department of North Carolina State College, as a feature of the summer session, conducts a short course of six days for white janitors and firemen, teaching the fundamental principles

of combustion, how to fire economically, and giving general instructions about heating systems and operation of the plant. The mornings are given to lectures and talks by members of the College faculty and representatives from other State departments, and the afternoons are given over to the practical problems and to inspection trips to different schools. The 1936 school will be held the week of August 3-10. Applications for admission should be sent to Professor L. L. Vaughan, North Carolina State College, Raleigh, North Carolina.

Short Course for Waterworks Operators—July 27-31, 1936

The Chemical Engineering Department of the North Carolina State College conducts a three-day short course for waterworks operators. The chemical background of water treatment will be presented simply, definitely, and comprehensively, with the purpose of making clear to waterworks men the nature of the chemicals used and their reactions, the principles involved in the chemical treatment of water for municipal and for industrial use, and an explanation of the control processes. Each individual will be provided with a short lithoprinted book of complete lessons studied, every lesson accompanied by experimental demonstrations to make the study concrete and practical. The course is designed to present in a clear practical way the fundamental principles of chemical treatment of water so as to give a measure of understanding and assurance in the minds of waterworks men in their waterworks practice. Classes will be held from 8 a.m. to 1 p.m. and from 2 p.m. to 4:30 p.m. Application for admission should be sent to Professor E. E. Randolph, North Carolina State College, Raleigh, North Carolina.

Short Course for Gas Plant Engineers and Operators August 3-7, 1936

The Chemical Engineering Department of the North Carolina State College conducts a three-day short course for gas plant engineers and operators. The course will include a comprehensive study of the fundamental principles of the manufacture of municipal and of industrial gas, the chemical reactions and principles involved, engineering problems, and control methods, together with clear, simple, and practical study of chemical nature of commercial gases, and of associated products; maintenance of uniform quality of product, prevention of losses and operation difficulties, and the chemical background of the various phases of gas production. The course is intended to be of definite help to operating men in gasworks. The class work will be fully illustrated with practical experiments. Classes will be held from 8 a.m. to 1 p.m. and from 2 p.m. to 4:30 p.m. Application for admission should be sent to Professor E. E. Randolph, North Carolina State College, Raleigh, North Carolina.

COLLEGE PREPARATORY MATHEMATICS AND ENGLISH

There are a large number of students applying for admission who are deficient in the mathematics requirement for college entrance. This is particularly true of those students who desire to take engineering.

Tests conducted at this College for several years show conclusively that students poorly prepared in English have difficulty with all their major college studies. The College Preparatory Course in English will improve the student in the three most important aspects of English: reading, writing, and speaking.

Plane geometry is required of all freshmen for college entrance. Since many of the smaller high schools in the State do not offer this subject, it

is given here so that students may enter college without conditions. Students cannot begin their freshman mathematics without this course.

Solid geometry is an entrance requirement for all engineering freshmen. It may be taken as an extra load during the second term of the freshman year. However, securing this training during the summer will be of great assistance to the student in his freshman year.

Many students having passed high school algebra are still poorly prepared for college mathematics. This is due to the short terms in the high school, overloaded teachers, and the fact that two or more years often elapse between taking high school algebra and entering college. A review course in algebra is offered to enable the student to secure a good foundation for his college mathematics.

In an effort to avoid these difficulties and to prepare students more thoroughly for freshman work, the College is offering this special college preparatory instruction in mathematics and English during the summer session. High school students planning to enter college are advised to consider this special instruction for the following reasons:

1. Better preparation means a better college record, which is often the basis of future recommendations and employment.

2. The removal of conditions which eliminate many undesirable irregularities.

3. Gaining experience in activities on a college campus which will aid in making a better start in September.

4. Lessening the possibility of scholastic failure in college.

The cost of this instruction is very reasonable. The estimate of expenses for the six weeks is as follows:

1. Room rent	$ 7.50
2. Board in College Cafeteria (estimate)	30.00
3. Registration fee	3.00

To these items should be added the tuition charge for the courses as listed in the description of courses given below:

Eng. s50. College Preparatory English. Five hours a week. No college credit. Mr. Clark and staff. 11 M. T. W. T. F. Pu. 108. Tuition, $9.00.

A course in the fundamentals of reading, writing, and speaking. Special emphasis will be given to the needs of the individual students; conferences will be held for the purpose of directing the activities of the course.

Math. s1. Plane Geometry. Ten hours a week. No college credit. Staff. 11-1 M. T. W. T. F. P. 100. Tuition, $15.00.

The usual theorems and exercises of plane geometry, as given in the preparatory and high schools.

Math. s2. Solid Geometry. Five hours a week. No college credit. Staff. 10 M. T. W. T. F. P. 100. Tuition, $9.00.

Selected theorems and exercises, emphasizing particularly the practical aspects of the subject, such as the volumes and surfaces of prisms, pyramids, cylinders, cones, the frustums of pyramids and cones, and the sphere.

Math. s3. Elementary Algebra. Ten hours a week. No college credit. Staff. 8-10 M. T. W. T. F. P. 100. Tuition, $15.00.

The usual topics in elementary algebra, including addition, subtraction, multiplication, division, fractions, exponents and surds, graphs, and quadratic equations.

SPECIAL SUMMER INSTRUCTION IN FORESTRY

For Forestry Sophomores—June 8-July 18
For Forestry Juniors—July 20-August 29

All courses listed below will give regular college credit, although most of the instruction will be given at Camp Hofmann, Mayesville, N. C.

The regular summer school registration and credit hour fees will apply to this instruction. Living expenses while at the camp will be taken care of through the Forestry Department.

Registration in these courses is restricted to regularly enrolled students as indicated above. Any special admissions must be approved by the Forestry Department. For additional information write to Dr. J. V. Hofmann, Director of the Forestry Department.

First Session—June 8-July 18

C. E. s101. Surveying and Mapping. Three credits. Required in summer immediately following sophomore year in Forestry. Staff. Prerequisite: C. E. 206, C. E. 207, and C. E. 208.

Boundary; topographical surveys; and calculations of sections of College experimental forestry lands. Finished section maps.

Note: This work will be done from camp located on experimental land and will begin at the close of the first three weeks of the first summer school period.

For. s211. Dendrology. Three credits. Sophomore summer camp. Mr. Slocum and Mr. Miller. Prerequisite: Bot. 207.

Field study and identification of tree species found in Coastal Plain, Piedmont, and Mountain regions of North Carolina.

Second Session—July 20-August 29

For. s203. Mensuration III. Three credits. Junior summer camp. Mr. Slocum and Mr. Miller. Prerequisite: For. 201, 202.

Practical work in use of instruments, collection of data for yield, stand, and volume tables, timber survey, log scaling, stem analysis, and office computations and correlation of data collected.

For. s212. Silviculture. Three credits. Junior summer camp. Mr. Miller and Mr. Slocum. Prerequisite: For. 202, 204.

Classification of forest types. Study of growth and development of forest stands. Establishment and measurement of sample plots. Study of reproduction following different methods of cutting.

Soils s323. Soils for Forestry Students. Three credits. Forestry camp. Second term. Mr. Clevenger. Prerequisite: Soils 115.

A field course in soils dealing with those phases of soil work most applicable to forest soils. Soil mapping is included.

SPECIAL THREE WEEKS' COURSES FOR TEACHERS OF VOCATIONAL AGRICULTURE

June 9 to June 27
July 6 to July 25

In response to requests from teachers of vocational agriculture, the State College Summer session will offer two special terms of three weeks each. The first term will open Tuesday, June 9, and close Saturday, June 27. The second term will open Monday, July 6, and close Saturday, July 25.

The week of June 29 to July 4 will be reserved for the State Conference of Teachers of Vocational Agriculture and the Young Tar Heel Farmers.

Courses will be offered both in the subject matter and professional fields, and will be arranged and scheduled as far as possible to meet the needs and convenience of the teachers.

Unless otherwise specified, these courses will be offered the first three weeks and repeated the second three weeks, provided enrollments are sufficient to warrant.

Most of the courses will carry one and one-half term credits. Three courses with a total of four and one-half term credits would be the normal load for a three weeks' period. In order to secure six semester or nine term credits, required for the renewal of certificates after July 1, 1937, it would be necessary to take two of the three weeks' periods, or one six weeks' session. The present plan provides for a program for the summer of 1937 similar to the one offered in 1936, and thereafter according to the needs of those interested.

The expenses for each three weeks' term will be as follows:

Registration fee	$ 1.50
For each term credit scheduled	3.00
Room rent (each student—two in a room)	4.00
Board (estimate of cafeteria cost)	15.00

Agr. Econ. s250. National Economic Problems Affecting Agriculture. One and one-half credits. Prerequisites: Econ. 102 and Agr. Econ. 260. Mr. Forster.

The discussion of the various farm relief programs which have been proposed to adjust or control production, assist in the marketing of farm products, and supply farmers with various kinds of credit.

Agr. Econ. s251. Marketing Methods and Problems. One and one-half credits. Prerequisites: Econ. 102 and Agr. Econ. 260. Mr. Forster.

Study of the problems and methods used in marketing farm products, with special reference to local and State coöperation in the selling of farm products and buying of farm supplies.

Agr. Econ. s252. Agricultural Finance. One and one-half credits. Prerequisites: Econ. 102 and Agr. Econ. 260. Mr. Forster.

A study of the methods used in financing the production and marketing of agricultural products. Consideration will be given to the recent developments in the supplying of mortgage, intermediate, production, and personal credit to farmers.

Agr. Eng. s217. Teaching Farm Shop Work. One and one-half credits. Both terms. Mr. Giles.

This course is designed for men teaching vocational agriculture in the high schools of this State. Methods of presenting the subject matter, as well as fundamental tool processes in woodworking, forging, soldering, pipe-fitting, and harness repair are studied. Laboratory work will be devoted to the construction of devices and appliances and to repair jobs designed to give proficiency in fundamental tool processes.

Agr. Eng. s370. Rural Electrification. One and one-half credits. Second term only. Mr. Jones. Mr. Giles.

A study of the problems involved in the distribution, uses, and costs of electricity on the farm.

A. H. s225. Animal Health. One and one-half credits. Mr. Grinnells.

A study of the structure and functions of the different systems of the animal body, paying attention to their relation to feeding, breeding, and management.

The definition, occurrence, etiology, natural infection, and economic importance of infectious diseases.

A study of hygiene, sanitation, and disease prevention.

A. H. s226. Feeds and Feeding. One and one-half credits. Mr. Ruffner.

To give information regarding the properties and value of practically all feeding stuffs and livestock feed formulas used in North Carolina. Special emphasis is placed on how the man with a few animals may produce or buy feed advantageously.

A. H. s227. Animal Breeding. One and one-half credits. Mr. Ruffner.

A study of the history and accumulated knowledge of type, characteristics, properties, and adaptability of the various types of animals to local conditions, followed by a study of selecting and mating animals by utilization of breeding data accumulated by the several purebred livestock clubs, associations, and breeders.

A. H. s228. Swine Production. One and one-half credits. Mr. Hostetler.

A study of the present swine situation and its relation to North Carolina. Most of the time will be devoted to lectures and reference material on the breeds, utilization of feeds, grazing crops, and sanitation. However, a few laboratory periods will be used to demonstrate the fundamentals of judging and application of feeding and management.

A. H. s229. Beef Cattle Production. One and one-half credits. Mr. Hostetler.

A study of the early history of beef cattle and the present trend in the industry. The text will be supplemented with lectures concerning the adaptation and treatment of beef cattle in the different sections of North Carolina. Application of feeding, management, and judging will be stressed during the time allocated for laboratory.

Educ. s361a. Trends in Teaching Vocational Agriculture. One and one-half credits. Staff.

Newer methods of instruction, including the planning of units and the problem of the out-of-school farm youth.

Educ. s361b. Trends in Teaching Vocational Agriculture. One and one-half credits. Staff.

Adapting evening class instruction to new conditions with respect both to content and method, programs and procedures essential in realizing the objectives of F. F. A.

Educ. s362a. Course of Study Problems. One and one-half credits. Staff.

Selection and organization of subject matter in the light of changing conditions in agriculture and in education.

Educ. s362b. Courses of Study Problems. One and one-half credits. Staff.

Improvements in supervised practice, including a study of educational values, records, and their use in all-day instruction, planning, and supervision.

Educ. s363a. Guidance and Individualized Instruction. One and one-half credits. Staff.

An evaluation of the different plans for individualizing instruction in agriculture, adapting instruction to the needs of boys having different educational and vocational objectives.

Educ. s363b. Guidance and Individualized Instruction. One and one-half credits. Staff.

Orientation of pupils entering vocational agriculture, occupational adjustment in farming and related fields, and procedures in counseling vocational pupils.

F. C. s205. Legumes and Grasses. First three-week period. Prerequisite: F. C. 101 or equivalent. One and one-half credits. Mr. Darst.

Advanced study of legumes and grasses as to their adaptation and uses. Emphasis is placed on their use in pastures and meadows and for soil conservation.

F. C. s330. Seed Judging. First three-week period. Prerequisite: F. C. 101 or equivalent. One and one-half credits. Mr. Darst.

Advanced study of quality in crops seeds and of standards of seed certification.

F. C. s334. Taxonomy of Field Crops. Second three-week period. Prerequisite: F. C. 101 or equivalent. One and one-half credits. Mr. Darst.

A study of the origin, botanical and agronomic classification, identification, and adaptation of commercially important crops and their varieties.

F. C. s330. Seed Judging. Second three-week period. Prerequisite: F. C. 101 or equivalent. One and one-half credits.

Hort. s207. Principles of Fruit Growing. One and one-half credits. Mr. Gardner.

A short course designed to give the student an understanding of the principles involved in the care and management of tree fruits. Attention will be given to nursery grades, sites, planting systems, planting, fertilization, pruning, spraying, varieties, bearing habits, and pollination problems.

Hort. s229. Home Floriculture. One and one-half credits. Mr. Randall.

A course designed to provide a practical knowledge of the principles and methods of propagating and growing garden flowers and potted plants for the home.

Hort. s213. Vegetable Gardening. One and one-half credits. Mr. Randall.

A course designed to provide a practical knowledge of the principles and methods of growing vegetables for home use and for local market.

L. A. s203. Plant Materials. One credit. Mr. Pillsbury.

Ornamental plants, their characteristics of use in planting design for home, school, and church grounds, and farmstead landscapes.

L. A. s204a. Landscape Gardening. Two credits. Mr. Pillsbury.

Land planning and planting design as applied in the improvement of home, school, church, community grounds, and farmstead groups. Fundamental principles and study of examples of this application to domestic and rural landscapes.

***L. A. s204b. Landscape Gardening.** One credit. Drafting-room work only. Mr. Pillsbury.

Practice in making measured surveys, mapping, and designing improvements in plan, and planting.

Poul. s310. Poultry Diseases. One and one-half credits. Mr. Dearstyne and Mr. Gauger.

An intensive course in the fundamentals of disease prevention; poultry sanitation; common diseases; autopsy methods; actual autopsy work as far as clinical material will allow.

Poul. s311. Poultry Nutrition and Poultry Judging. One and one-half credits. Mr. Williams and Mr. Dearstyne.

An intensive course in the fundamentals of poultry nutrition. Standard and utility judging of popular breeds of poultry. Lecture and laboratory practice in judging.

Soils s315. Soils of North Carolina. One and one-half credits. Mr. Lutz.

The identification, crop adaptation, productivity, fertilizer needs, and other characteristics of North Carolina soil types.

Soils s317. Soil Conservation and Land Use. One and one-half credits. Mr Lutz.

A course dealing with the factors affecting erosion and the methods of erosion control, including a soil conservation and land-use program for North Carolina.

Zool. s217. Insect Pests. One and one-half credits. Staff.

A brief course describing principal injurious insects and methods for their control.

*Not given 1936, given 1937.

COURSES TO BE OFFERED IN THE SUMMER SESSION

ABBREVIATIONS FOR BUILDINGS

C.—Ceramic
G.—Gymnasium
H.—Holladay
P.—Page.
P. & E.—Physics and Electrical Engineering Building
Pe.—Peele Hall
Pk.—Polk Hall
Pr.—Primrose
Pt.—Patterson
R.—Ricks
T.—Textile
Pu.—Pullen Hall
W.—Winston
Z.—Zoology Building

*The courses appearing hereafter with numbers 100, 200, and the 300 courses, which are starred, may be taken for undergraduate credit only.

AGRICULTURAL ECONOMICS

Agr. Econ. s260. Agricultural Economics. Five hours a week. Three credits. Mr. Forster. 10 M. T. W. T. F. R. 207.

A study of the economics of agricultural production; marketing of farm products; farm credit; land tenure and social economic conditions of the farmer.

Rur. Soc. s302. Rural Sociology. Five hours a week. Three credits. Mr. Hamilton. 11 M. T. W. T. F. R. 207. Prerequisite: Soc. 103 or Econ. 103.

The culture, social organization, and social problems of rural people, with special reference to Southern rural life and proposed programs of development.

AGRICULTURAL ENGINEERING

Agr. Eng. s130. Farm Equipment. Three credits. Mr. Giles. By arrangement. Pt. 4.

A study of modern mechanical equipment for the farm.

Agr. Eng. s135. Terracing and Drainage. Three credits. Mr. Giles. By arrangement. Pt. 4.

A study of the different methods of disposing of surplus water and the prevention of erosion.

ANIMAL HUSBANDRY AND DAIRYING

A. H. s102. Animal Nutrition I. Three credits. Mr. Ruffner. By arrangement.

A study of animal nutrition; physiology of digestion; nutrients; feeding standards; economical and balanced rations. Practical work given.

A. H. s103. Dairying. Three credits. Mr. Haig. By arrangement.

The secretion, composition and properties of milk are studied, with factors influencing quality and quantity of milk and cream. The use of the Babcock tests, butter making on the farm, and operation of cream separators constitute the laboratory work.

A. H. s201. Swine Production. Three credits. Mr. Hostetler. By arrangement.

A study of adaptability of swine, with emphasis on feeding, judging, and management.

A. H. s202. Animal Breeding. Three credits. Mr. Ruffner. By arrangement.

A study of breeding and improvement of our animals; a first-hand study of successful breeding establishments and their problems.

Courses for Graduates Only

A. H. s402. Research Studies in Animal Husbandry. Three credits. Prerequisite: Eighteen credits in A. H. Staff. By arrangement.

An intensive study of experimental data.

BOTANY

Bot. s101. General Botany. Five recitations, four hours laboratory. Four credits. Mr. Shunk. 8 M. T. W. T. F., 2-4 M. W. Pt. 38.

Nature of the higher plant. A course presenting the fundamentals of the structure and function of the typical flowering plant.

Bot. s102. General Botany. Four credits. Mr. Shunk. 9 M. T. W. T. F., 2-4 T. Th. Pt. 38.

Survey of the plant groups. An introduction to the various major kinds of plants through the study of the life histories of types.

Bot. s203. General Bacteriology. Five recitations, four hours laboratory. Four credits. Mr. Shunk. Prerequisite: Botany 102 or equivalent. 11 M. T. W. T. F., 2-4 T. Th. Pt. 38.

An introduction to the principles of bacteriology. Laboratory work on modern cultural methods of handling and studying bacteria.

Courses for Graduates Only

Botany s401. Pathology of Special Crops. Three credits. Prerequisite: Bot. 201 or 203, 301. Mr. Lehman or Mr. Poole. By arrangement.

A comprehensive study of the etiology, symptoms, and control of specific diseases.

Botany s402. Bacteriology: Special Studies. Three credits. Prerequisite: Bot. 203, 302. Mr. Shunk. By arrangement.

Special work on restricted groups of bacteria, such as nitrogen bacteria of the soil, milk organisms, and special groups of bacteria in water.

Botany s406. Research in Botany. Three credits. By arrangement. Prerequisite: 30 hours 100-300 courses in Botany.

CHEMISTRY

Chem. s101. General Chemistry. Five hours in classroom and four hours in laboratory each week. Four credits. Equivalent to first term General Chemistry as given in the regular college year. Mr. Jordan. 8 M. T. W. T. F.; 1-5 T. W. 114.

Composition and properties of air and water. First principles of chemistry, such as atomic theory, laws of chemical combination, valence, chemical formulas and equations, oxidation, reduction, behavior of gases and solutions. Study of a few typical elements, such as oxygen, hydrogen, carbon, and nitrogen, together with their simpler compounds.

Chem. s103. General Chemistry. Five hours in classroom and four hours in laboratory each week. Four credits. Equivalent to second term General Chemistry as given in the regular college year. Mr. Jordan. 10 M. T. W. T. F.; 1-5 Th. W. 102.

Particular attention given to chlorine, sodium, nitrogen, sulphur, fluorine, bromine, and their compounds. Study of such common substances as salt, lye, soda, carbon disulfide, prussic acid, petroleum, coal tar, acetylene; ammonia and its more interesting uses, such as in ice machines; sulphur dioxide in household refrigerators and as a bleaching and germicidal agent; compounds of nitrogen in warfare and agriculture. Introduction to acids, bases, salts, ionization, hydrolysis, equilibrium, the periodic law and the new theories of the structure of the atom.

Chem. s105. General Chemistry. Five hours in classroom and four hours in laboratory each week. Four credits. Equivalent to third term General Chemistry as given in the regular college year. Mr. Jordan. 11 M. T. W. T. F. Laboratory 1-5 T. W. 114.

Chemistry of clays, ceramics, glass, cement, soils, fertilizers, insecticides, lime, hard water, alloys, paints, storage batteries. photography, flames and explosions. Compounds and properties of phosphorus, arsenic, bismuth, silicon, boron, potassium, calcium, magnesium, zinc, aluminum, iron, tin, lead, nickel, copper, mercury, silver, gold, platinum, and other less common elements. Thermochemistry, colloids, and radioactivity.

Chem. s211. Qualitative Analysis. Two hours lecture, with four laboratory periods of three hours each per week. Equivalent to one term of college work. Five hours credit. Prerequisite: General Chemistry. Mr. Williams. 10 T. Th.; laboratory to be arranged. W. 217.

A systematic study and separation of the metallic ions and non-metallic ions into their respective groups, their identification and the chemical reactions involved. The last two weeks will be given over to the complete analysis of mixed salts, compounds, and alloys.

Chem. s212. Quantitative Analysis, A. Two lectures and twelve hours laboratory. Equivalent to one term of college work. Five hours credit. Prerequisite: Qualitative Analysis. Mr. Williams. Arrange. W. 217.

This work will deal with the theory and practice of making up and standardizing acids, bases, di-chromate and permanganate solutions, also the determination of the strength of unknown acids and bases, the analysis for the per cent purity of iron ores, oxalates, sulphates, magnesium, phosphate rock, etc.

Chem. s213 (214). Quantitative Analysis. Five credits. Mr. Williams. Required of sophomores in Chemical Engineering and those majoring in Chemistry. Prerequisite: Chem. 211. By arrangement. W. 217.

A continuation of Chem. 212. Substances of more difficult nature are analyzed—minerals, steel, alloys, limestone, Paris green, etc.

Chem. s241. Introduction to Organic Chemistry. Four hours class and five hours laboratory. Four credits. Staff. Prerequisite: Chem. 101, 103, 105. 8 M. T. W. T., 2-4:30 M. W.

Hydrocarbons, alcohols, aldehydes, ketones, acids, ethers, esters, amino acids, and benzene derivatives; carbohydrates, fats, proteins, and related compounds; vitamins, enzymes, hormones, flavors.

Chem. s321. Organic Chemistry. Four hours class and five hours laboratory for each four hours credit. Hours by arrangement. Staff. (This course has a total of 12 credits and continues through the regular college year.) Prerequisite: Chem. 101, 103, 105.

Aliphatic and aromatic compounds; practical applications; methods of preparation and purification of compounds.

Chem. s340. Food Products and Adulterants. Five hours a week. Three credits. Prerequisite: Chem. 101, 103, 105, and 241. Staff. 9 M. T. W. T. F.

Food principles, cereals, starches, sugars, fats, milk and milk products, the packing house, food preservation, beverages, spices and condiments; food legislation.

†Chem. s341. Vitamins. Five hours a week. Three credits. Prerequisite: Chem. 241 or 321. Staff. 12 M. T. W. T. F.

Application of vitamin hypothesis to animal nutrition; history, nomenclature, properties, distribution, effects of deficiencies, and vitamin values.

Chem. s344. Food and Nutrition. Five hours a week. Three credits. Prerequisite: Chem. 241 or 321. Staff. 10 M. T. W. T. F.

Carbohydrates, fats, proteins, amino acids, minerals, fiber, vitamins, and enzymes; nutritive value of food materials; digestion, food idiosyncrasy; acidosis and alkalosis.

ECONOMICS

Econ. s102. Introduction to Economics. Five hours a week. Three credits. Mr. Leager. 8 M. T. W. T. F. Pe. 108.

This course is designed for those students who do not feel able to devote more than one term to the study of economics.

It includes a study of the great fundamental economic laws which apply to all professions and occupations; a study of the production, distribution, and value of economic goods, and a study of the institutions, agencies, and ideals which dominate, operate, and control the manner, means, and methods of making a living.

Econ. s103a. General Economics. Five hours a week. Three credits. Mr. McNatt. 8 M. T. W. T. F. Pe. 206.

This is the first term of the regular college course in General Economics.

An introduction to the general field of economics. A study of economic institutions and the general principles governing the production and distribution of wealth under the existing economic organization.

† Not offered in 1936.

Econ. s103b. General Economics. Five hours a week. Three credits. Mr. McNatt. 9 M. T. W. T. F. Pe. 206.

This is the second term of the regular college course in General Economics.

Econ. s103c. General Economics. Five hours a week. Three credits. Mr. McNatt. 11 M. T. W. T. F. Pe. 206.

This is the third term of the regular college course in General Economics.

Econ. s112. Accounting for Engineers. Five hours a week. Three credits. Mr. Leager. 10 M. T. W. T. F. Pe. 108.

Required of students in the School of Engineering. Not open to students in Business Administration.

A survey of accounting and financial statements and records; their construction, their use and interpretation.

Econ. s210. Business Organization. Five hours a week. Three credits. Prerequisite: Econ. 102 or 103. Mr. Moen. 8 M. T. W. T. F. Pe. 109.

Forms of business enterprise, single enterprise, partnership, joint-stock company, corporation, and principles of business management.

Econ. s211. Business Law. Five hours a week. Three credits. Prerequisite: Econ. 102 or 103. Mr. Moen. 10 M. T. W. T. F. Pe. 109.

Required of seniors in Business Administration and in Ceramic, Chemical, Civil, Architectural, Electrical, and Mechanical Engineering. Elective for other students.

A general survey of the sources of law, fields of law, contracts, agency, sales, law of partnerships and corporation, negotiable instruments, bailments and carriers, personal property, suretyship and guaranty, bankruptcy, crimes in business.

Econ. s217. Advertising. Five hours a week. Three credits. Mr. Moen. 7 M. T. W. T. F. Pe. 109.

Principles and practices of advertising and its relation to the distribution and sales program.

Econ. s330. Principles of Insurance. Five hours a week. Three credits. Prerequisite: Econ. 103 or equivalent. Mr. Leager. 11 M. T. W. T. F. Pe. 108.

Risk as an element of all agricultural and industrial activity. Such risks as can be covered by insurance are discussed, with the appropriate form of insurance, e. g., employer's liability, workmen's compensation, fire, life, and other forms.

Courses for Undergraduates

Ed. s203b. Educational Psychology. Five hours a week. Three credits. Required of students in Education; elective for others. Mr. Garrison. 10 M. T. W. T. F. H. 5.

This part of educational psychology is concerned with the physical and mental development of high school boys and girls. Social development; character development; emotional development and control; religious and moral development; and mental hygiene are topics given special consideration.

***Ed. s303. Extra-Curricular Activities in the Secondary School.** Five hours a week. Three credits. Prerequisite: Junior standing or teaching experience. Mr. Showalter. 12 M. T. W. T. F. Pe. 208.

The home room; pupil participation in government, the assembly; clubs; publications; recreational activities; athletics; honor societies; social organizations; financial support.

Ed. s307. Methods of Teaching Agriculture. Three credits. Messrs. Cook and Armstrong. 8 M. T. W. T. F. Required of students in Agricultural Education. Prerequisites: Ed. 203, 208, or equivalents, and at least twelve credits in Agriculture.

Organization of subject matter; teaching techniques; supervised practice; textbooks and reference material; Future Farmers of America; room arrangement and equipment.

VOCATIONAL GUIDANCE.—Guidance is recognized as a part of the work of each teacher in the school. Pupils of all ages require assistance in the growth and progress through their school problems. Each stage of school development as elementary, junior high, senior high, and college, requires special attention which the individual teacher may render. In addition to the work done in the classroom, there is that of the school counselor and director of the work whose duty it is to provide materials and programs of work, together with the care of such special cases as require specific aid.

Vocational Guidance, Ed. s320, is a beginning course for advanced undergraduates and graduates, also for teachers in service who wish to help in guidance activities. Occupational Counseling, Ed. s412, is a graduate course for those who have had Ed. s320 and some experience in teaching, and those who have had a wider experience in school and industry. Closely correlated with these courses are those in psychology, sociology, economics, and testing.

Ed. s320. Vocational Guidance. Five hours a week. Three credits. Mr. Boshart. Prerequisite: Twelve credits in Education. 8 M. T. W. T. F. H. 16.

The course in Vocational Guidance is intended to give emphasis to the place of guidance in the school program. It will treat of the development of educational and vocational guidance, its relation to personnel work, principles and practices of guidance and employment, child legislation, and forms and records for school use.

Ed. s321. Vocational Education. Five hours a week. Three credits. Mr. Boshart. Prerequisite: Twelve credits in Education. 11 M. T. W. T. F. H. 16.

This course, dealing with the problems of vocational education, is intended to give acquaintance with its underlying philosophy, its place in our education, the laws governing it, and the prevailing practices and administration. It is of particular interest to administrators and teachers who have or expect to have to do with the direction of educational work in agriculture, homemaking, industry, and commerce. It deals with all-day, evening, part-time, and general continuation class work.

***Ed. s330. Visual Instruction.** Five hours a week. Three credits. Prerequisite: Twelve credits in Education. Mr. Armstrong. 11 M. T. W. T. F. Pe. 201.

An advanced course in the psychology, methods, and technique of visual instruction; its place and limits, evaluation and expense of various aids, aids available. Practice in the making and use of practical visual aids.

***Ed. s331. Visual Aids in Social Sciences.** Five hours a week. Three credits. Prerequisite: Twelve credits in Education. Mr. Armstrong. 8 M. T. W. T. F. Pe. 201.

A detailed study of visual materials, devices, and procedures applicable to teaching the social sciences, including geography. Emphasis will be given to motivation, facilitating the learning process, and fixation. Various devices will be used by the class.

***Ed. s336. Problems in Secondary Education.** Five hours a week. Three credits. Prerequisite: Twelve credits in Education. Mr. Showalter. 11 M. T. W. T. F. Pe. 206.

The purpose of this course is to give as practical assistance as possible to those men and women who wish to become or are now serving as high school principals in North Carolina. The following problems will be discussed:

Aims of secondary education; the curriculum (with special reference to the North Carolina course of study) standards for high schools; classification of pupils; control of pupils; attendance; guidance of pupils; classroom standards; tests and examinations; marking system; directed study; class schedule making; duties of principals; supervision of instruction; selection of teachers; teaching load; salaries; textbooks, lectures, readings, and reports.

***Ed. s345. Curriculum Materials in Physical Science.** Five hours a week. Three credits. Elective. Mr. Showalter. 10 M. T. W. T. F. Pe. 211.

Survey of physical science with emphasis on recent developments and the generalizations that influence beliefs and attitudes.

INDUSTRIAL ARTS.—The summer session will emphasize the preparation of teachers, supervisors, and principals for teaching and directing industrial arts in the various communities of North Carolina. The rapid growth of industrial education in our State is creating a demand for a competent personnel for making this work a definite functioning element in education rather than a type of "busy work," as is so often likely to be the case. Courses will be offered in subject matter, methods of teaching, administration, shop practice, and drawing.

Industrial arts depends largely upon the soundness of the philosophy underlying its introduction into the field of education. For this reason professionally minded teachers and administrators will welcome courses giving them a better basis for their classroom activity.

Principals, supervisors, and teachers are needed to introduce and develop the various phases of industrial education in our junior and senior high schools, part-time and continuation schools, and evening schools. The demand is for those who are familiar with both general and vocational education and at the same time capable of placing the proper emphasis upon the more practical phases of education. Supporting courses are offered in the Engineering and Textile Schools.

The underlying purpose of the courses offered in this field is to acquaint those who are responsible for developing the possibilities of industrial arts and other shop activity in our school system with prevalent practices and to give helpful aids in program construction. The possibilities of creating interest and motivating school subjects are often lost sight of because of the lack of knowing how to utilize the everyday things about us.

For those who are interested in administrating and teaching industrial arts, the following courses will be offered: The Theory of Industrial Arts, Practical Arts Problems, the Development of Vocational Education, and Problems of the General Shop versus Problems of the Unit Shop, all of which are correlated with courses in mechanical drawing, woodwork, metal work, electrical work, textiles, and auto-mechanics. These courses will be taught by instructors of wide experience helpful to teachers of general shop and unit courses.

We have teachers of academic subjects who have had fine experience in working with tools. These teachers, with the aid of summer session classes in the Department of Industrial Arts, could readily prepare themselves to meet the requirements for teaching shop and drawing classes.

Credit for these courses may be used for college credit, raising certificates, or renewing certificates. Teachers desiring to raise or renew their certificates will take the first two courses in the list following, and one course selected from the remainder of the list.

Ed. s353. The Theory of Industrial Arts. Five hours a week. Three credits.

†Ed. s354. Practical Arts Problems. Ten hours a week. Three credits.

Tex. s115. Textiles for Teachers. Four hours a week. Two credits.

Ed. s203b. Educational Psychology. Five hours a week. Three credits.

Ed. s320. Vocational Guidance. Five hours a week. Three credits.

Ed. s321. Vocational Education. Five hours a week. Three credits.

***Ed. s381. Guidance and Discipline of Students.** Five hours a week. Three credits.

Note: The above courses are described elsewhere in this bulletin. Attention is also called to the courses listed under Engineering which are especially designed for teachers of Industrial Arts and Trades and Industries.

†A fee of $1.00 will be charged those taking Ed. s354 to pay for the materials used.

Ed. s352. Theory of Industrial Arts. Five hours a week. Three credits. Prerequisite: Twelve credits in Education. Miss Bell. 11 M. T. W. T. F. H. 15.

A study of the value and place of Industrial Arts in the public school. A study of the industries will be made with the idea of making suitable selection of projects to correlate with other school subjects and to aid in the development of methods and directions for activity work in the early grades. Intended for teachers, supervisors, and principals. Emphasis will be placed upon the use of the Industrial Arts to motivate and sustain effort in the learning process.

Ed. s354. Practical Arts Problems. Five or ten hours a week. One and one-half credits or three credits. Prerequisite: Twelve credits in Education or the consent of the instructor. Miss Bell. 9-11 M. T. W. T. F. H. 15.

Intended for the classroom teacher and supervisor for acquaintance with materials and how to use them. Instruction will be given in the making of posters, block printing, stenciling, work with plastics as clay and plasterine, making of baskets from reeds, raffia, and other materials, paper and cardboard instruction, and in the use of such other materials as are suited to the work in hand. It will be of aid to administrators in the development of the activity program.

Ed. s357. The Problems of the General and Unit Shops. Five hours a week. Three credits. Mr. Boshart. 9 M. T. W. T. F.

Intended for those who are teaching or expect to teach shop work and drawing. Its purpose is to acquaint students with the possibilities of the general shop as compared with those of the unit shop and to aid in setting up procedures for each type of shop under conditions where they can best function. Those taking this course should take parallel courses in shop instruction, unless they have had considerable experience. Problems of organization, equipment, instruction sheets and their uses, and courses of study will be considered.

Ed. s360. Special Problems in Teaching Agriculture. Five hours a week. Three credits. Prerequisite: Twelve credits in Education, including Methods of Teaching Agriculture. Messrs. Cook and Armstrong. 10 M. T. W. T. F. Pe. 201.

This course will consider special problems in agricultural teaching and the preparation of teaching plans, involving the use of survey information. Each student will prepare a program of work for a specified community.

***Ed. s381. Guidance and Discipline of Students.** Five hours a week. Three credits. Prerequisite: Twelve credits in Education. Mr. Cook. 9 M. T. W. T. F. Pe. 201.

A study of the needs for moral guidance and discipline; the responsibility of school teachers and administrators for the moral and civic conduct of their students; the nature of the problem, recent development, difficulties, agencies responsible; materials and procedures.

Ed. s412. Occupational Counseling. Five hours a week. Three credits. Mr. Boshart. Prerequisite: Ed. 320, 332 or equivalent. 12 M. T. W. T. F. H. 16.

This course is intended for teachers of experience and those interested in the problems of guidance in school and life. Attention is given to

group and individual counseling as it may be applied to the junior and senior high schools, colleges, or placement offices, and to the procedures of conducting interviews and conferences. Information concerning occupational material will be organized, evaluated, and applied to type cases. The relation to personnel work will be considered as the functions of school and industry are studied.

Ed. s416. Problems in Agricultural Teaching. Five hours a week. Three credits. Prerequisite: Ed. 203, 307, and at least twelve other credits in Education and Agriculture. Experience in agricultural teaching will be accepted in lieu of Ed. 307. Mr. Cook. By arrangement. Pe. 201.

Investigations, reports, and a critical evaluation of present practices with constructive remedies. The content of the course will depend on the interests and needs of the individual members of the class.

Ed. s420. Agricultural Education Seminar. One credit. Mr. Cook, Mr. Armstrong. By arrangement. Prerequisite: Eighteen credits in Education.

A critical review of current articles and books of interest to students of agricultural education.

Ed. s421. Research in Special Fields of Education. Staff.

ENGINEERING

A. E. s107. Pencil Sketching. Five hours per week. Three credits. Mr. Paulson. 9 M. T. W. Th. F. A. E. 307.

Quick sketching of objects as seen and imagined in perspective. Elementary principles of perspective, especially as an aid to visualization.

A. E. s113. Fine Arts for Teachers. Eight hours per week. Three credits. Mr. Paulson. 11 M. T. W. Th. F., 12 M. W. F. A. E. 307.

Black and white, and color drawing adapted to grade school use. Lettering, illustrating, poster making, etc.

A. E. s214. Art Appreciation for Teachers. Five hours per week. Three credits. Mr. Paulson. 8 M. T. W. Th. F. A. E. 307.

Picture study of the list suggested by the State Board of Education for grade school use, including paintings, architecture, and sculpture.

C. E. s102. Surveying I. Three credits. Staff. Two sections: one section will run for three weeks, six days a week; the second section will run for six weeks, afternoons only. C. E. Building and field.

The use, care, and adjustment of surveying instruments; elementary land surveying, traverse lines, leveling, stadia measurements, topographical surveying, plane table surveying; office work in connection with field surveying.

C. E. s220. Advanced Surveying. Three credits. Staff. Required in the summer immediately following the sophomore year in Civil Engineering. Prerequisite: C. E. 206 and 207.

Plane table practice, special problems in surveying practice; triangulation, railroad and highway spirals; hydrographic surveying with sextant;

plane table problems; the use and rating of current meters; measurement of stream flow; drainage problems. Laying out proposed construction work. Topography, details, special problems.

C. E. s200. Mechanics. Six or twelve hours a week. Three or six credits Mr. ..... Required of Engineering juniors. Prerequisite: Math. 203. P. 102.

Either the first, second, third, or a combination of two, or all three terms may be taken. First term covers statics, concurrent, non-concurrent and parallel forces, friction, centroids, and moment of inertia. Second term covers kinetics, rectilinear and curvilinear, motion and rotation. Third term covers work, power, and energy.

E. E. s101. Electrical Engineering Fundamentals. Twelve hours a week. Six credits. Mr. Fouraker.

This course covers the second and the third terms of the introductory course in Electrical Engineering. Electrical engineering problems, fundamental laws of electric, magnetic, and dielectric circuits.

M. E. s102. Engineering Drawing. Twelve or twenty-four hours a week. Three or six credits. Required of Engineering freshmen. Mr. Briggs. 8-10 or 8-12 M. T. W. T. F. S. P. 106.

Drawing-board work, covering lettering, orthographic projection, auxiliary projection, isometric projection, cabinet projection, intersection and development, working drawings, and blue printing.

M. E. s103. Descriptive Geometry. Twelve hours a week. Three credits. Mr. Briggs. 8-10 or 10-12 M. T. W. T. F. S. P. 106.

This work covers the representation of geometrical magnitures by means of points, lines, planes, and solids, and the solution of problems relating to them.

M. E. s105. Woodworking. Eight or twelve hours a week. Two or three credits. Required of sophomores in Engineering. Mr. Wheeler.

Deals with elementary joinery, finishing, theory of dry-kilning, wood turning. Lectures, demonstrations, and practice in hand work and machine methods. Typical patterns and core boxes are constructed, such as solid, split, and loose-piece patterns; mounting of patterns on boards and their preparation for use in the foundry.

M. E. s107. Foundry. Eight or twelve hours a week. Two or three credits. Required of sophomores in Engineering. Mr. Wheeler.

Lectures, demonstrations, and practice in molding and core making, furnace operations, melting and casting of ferrous and non-ferrous metals and their alloys. Instruction and practice in the production and malleable castings, and heat treatment of castings.

M. E. s108. Forge. Eight or twelve hours a week. Two or three credits. Required of sophomores in Engineering. Mr. Wheeler.

A study of the principles and practices as applied to the forging of wrought iron and steel. Lectures, demonstrations, and practice in forge welding. Tool making and heat treatment.

M. E. s109. Metallurgy. Four, eight, or twelve hours a week. Two, four, or six credits. Required of sophomores in Mechanical Engineering. Prerequisite: Chem. 101. Mr. ..... P. 102.

Study of ferrous metals and their alloys; mining, smelting, refining, shaping, and heat-treating.

M. E. s110. Mechanical Drawing. Eight or sixteen hours a week. Two or four credits. Mr. Briggs. P. 106.

Drawing-board work, covering machine fastenings, pipe fittings, elementary cams, technical sketching, working drawings, tracing, and blueprinting.

SHOP AND DRAWING COURSES FOR INDUSTRIAL ARTS TEACHERS

E. E. s250. Electrical Shop. Ten hours a week. Three credits. Mr. Keever. 10-12 M. T. W. Th. F. E. E. 303.

Intended for those preparing to teach problems in elementary electricity in junior and senior high school shops. Deals with suitable projects for illustrating the various phases of electrical activity for the general industrial arts shop correlating with general science and physics.

M. E. s210. Mechanical Drawing for Teachers. Ten hours a week. Three credits. Mr. Briggs. 8-10 or 10-12 M. T. W. Th. F. P. 106.

Intended for those teaching or preparing to teach mechanical drawing and shop practice. Consists of lectures and drawing-room practices involving problems for the junior and senior high school mechanical drawing. The elements of lettering, instrument practice, projections, intersections, developments, tracing, blue-printing, and methods of instruction will be considered. (For advanced work in drawing see Architectural and Mechanical Engineering.)

M. E. s220. Metal Work. Ten hours a week. Three credits. Mr. Ferguson. 2-4 M. T. W. Th. F. Shops.

Intended for teachers and prospective teachers of sheet metal in junior and senior high schools. Consideration will be given to courses of study, shop layouts, equipment, and the fundamentals of working with sheet metals, as iron, tin, copper, brass, and pewter. Projects involving soldering, raising, chasing, seaming, etching, and coloring will be used.

M. E. s230. Art Metal Crafts. Ten hours a week. Three credits. Mr. Knight. 2-4 M. T. W. Th. F. Shops.

A course dealing with decorative metal working and involving problems suitable for art classes in high school and college. Deals with designing and transferring of design to metals and working various metals, as copper, brass, pewter, aluminum, and silver. Projects involving cutting, filing, hard and soft soldering, riveting, etching, raising by hammering, spinning, and coloring will be used. Articles will include paper knives, trays, bowls, and simple jewelry.

M. E. s240. Auto Mechanics. Ten hours a week. Three credits. Mr. Bridges. 2-4 M. T. W. Th. F. Shops.

Intended for teachers and prospective teachers of auto mechanics where they may obtain acquaintance and experience in dealing with instruction

units for junior and senior high schools. Consideration will be given to the organization of teaching material, shop layout, shop management, selection of tool equipment, and tool-room operation.

M. E. s250. Woodworking for Teachers. Ten hours a week. Three credits. Mr. Rowland. 2-4 M. T. W. Th. F. Shops.

Stresses practical methods for teaching woodwork in general and in unit shops on the Industrial Arts basis. Problems considered are to be used chiefly for grades seven, eight, and nine, or older pupils when beginning. Deals primarily with hand tools, common woods, and elementary finishes.

M. E. s350. Woodworking for Teachers (Advanced). Ten hours a week. Three credits. Prerequisite or its equivalent and consent of the instructor. Mr. Rowland. By arrangement. Shops.

Emphasis is placed on educationally significant projects adapted to older students where the use and care of both hand and machine tools is an important factor. Opportunity for practice in grinding edged tools, filing and setting of saws, the maintenance of other tools, and the organization and management of tool rooms and supplies.

ENGLISH

Eng. s101. Composition. Five hours a week. Three credits. Mr. Hartley. 11 M. T. W. T. F. Pu. 103.

Illustrative readings; exercises in types of composition; collateral reading. Conferences.

Eng. s202. Advanced English Grammar. Five hours a week. Three credits. Mr. Clark. 9 M. T. W. T. F. Pu. 108.

For teachers of English in high schools or in the grades, and for journalists and other creative writers. The science of grammar and the art of its application. The history of forms, inflections, and idioms where helpful in understanding present usage.

Eng. s227. The Development of the Drama. Five hours a week. Three credits. Mr. Hartley. 9 M. T. W. T. F. Pu. 103.

Origin, progress, and influence; plot, characterization, and interpretation of certain readings.

Eng. s236. Victorian Poetry. Five hours a week. Three credits. Mr. Hartley. 8 M. T. W. T. F. Pu. 103.

Principal poets of the Victorian era; emphasis on Tennyson and Browning.

***Eng. s330. Shakespeare.** Five hours a week. Three credits. Mr. Clark. Prerequisite: Eng. 101 and three additional credits in English. 10 M. T. W. T. F. Pu. 108.

An analysis of principal plays. Report on parallel readings.

***Eng. s332. The Romantic Movement.** Five hours a week. Three credits. Mr. Clark. Prerequisite: English 101 and three additional credits ing English. 12 M. T. W. T. F. Pu. 108.

Representative poems of Gray, Blake, Burns, Wordsworth, Coleridge, Scott, Southey, Byron, Shelley, and Keats.

F. C. s1. Cotton Classing. Twenty hours a week for six weeks. No college credit. Mr. Darst, Mr. Cotner. 9-1 M. T. W. T. F. Pt. 45.

The Summer School of Cotton Classing offers an intensive course in the grading and stapling of cotton.

The course will consist of lectures and daily practice in grading and stapling cotton samples according to the "Universal Cotton Standards."

The course will be given each day, with the exception of Saturday, for four hours a day.

The first period of each day will be devoted to lectures and discussions, and the remaining time will be used in the actual practice of grading and stapling cotton.

All the instruction in classing will be done by men holding a Federal Cotton Classing license.

The Cotton Classing course is designed for a special group, and does not carry collegiate credit. There is a flat charge of $27.50 for the whole course in Cotton Classing. Persons registered for 50 per cent or less of the course will be charged $15.00. All fees are to be paid on or before registration.

A Cotton Classing certificate will be issued by the College to those satisfactorily completing the six weeks course.

The school has been serving the State and neighboring states for fourteen years. The school has international recognition, as men from the following countries have taken the course: South America, India, China, South Africa, Belgium, and Germany.

Persons expecting to attend this course should notify Dr. J. B. Cotner, State College Station, Raleigh, N. C.

F. C. s206. Seed Certification Problems. Five hours a week. Three credits. Mr. Darst. Prerequisite: F. C. 101. Arranged. Pt. 26.

A study of standards for quality in field crops for certification.

F. C. s210. Cotton Production, or s215. Tobacco Production. Five hours a week. Three credits. Mr. Cotner. 8 M. T. W. T. F. Pt. 45.

Lectures and recitations on history, production, adaptation, types and varieties, including cultivation, harvesting, grading, and marketing, will be given. Laboratory consists of variety studies, the classing of cotton, and the grading of tobacco.

F. C. s225. Cotton Classing II. Three or six credits. Mr. Cotner. 9-11 or 11-1.

Required of sophomores in Textile Manufacturing, Chemistry and Dyeing, and Designing.

A study of the universal standards of American upland cotton for grade and staple. Factors that determine grade and their relative value. Practice will consist of classing and stapling three to five thousand samples of cotton.

F. C. s351. Crop Research. Undergraduate credits, 3-9; Graduate credits, 2-6. Elective for graduates and advanced undergraduates. Mr. Darst, Mr. Cotner. By arrangement. Pt. 26.

F. C. s415. Plant Breeding Research. Three credits. Prerequisite: F. C. 345. By arrangement. Mr. Cotner.

Inheritance problems of the plants. Available during any season appropriate to the study of the particular crop.

GEOLOGY AND PHYSICAL GEOGRAPHY

Geol. s101. Earth History. Five hours a week. Three credits. Mr. Stuckey. 9 M. T. W. T. F. Pr.

Open to both college students and teachers who are interested in a better understanding of the world about them.

An introductory course in general geology dealing with the changes which have taken place in the earth and the physical and life processes which have brought about these changes. The first half of the course deals with the processes of physical and dynamical forces, while the second half deals with the historical development of the earth as it has been affected by those forces and by life processes.

Geol. s120. Physical Geology. Three lectures; four hours laboratory and field work. Three credits. Mr. Stuckey. 8 M. W. F. Laboratory by arrangement. Pr.

Physical Geology as related to forces acting on and in the earth, and materials in the earth's crust.

Geol. s291. Geology of North Carolina. Three lectures; four hours laboratory. Three credits. Mr. Stuckey. 12 M. W. F. Laboratory by arrangement. Pr.

Elective for students in the Schools of Engineering and Science and Business who have had Geol. 101 or 120.

Also open to teachers who are interested in the geology of North Carolina and who may be interested in helping students to collect and assemble groups of the common rocks and minerals from different sections of the State.

The course will cover the physical geography, general geology, common rocks and minerals, and mine and quarry products of the State.

HISTORY

Hist. s101a. Economic History. Five hours a week. Three credits. Mr. Lockmiller. 9 M. T. W. T. F. Pe. 1.

A survey course dealing with the European background of American history; English colonization and government; and colonial agriculture, industry, finance, commerce, and social life. The economic background of the Revolution and the problems confronting the states during and after the War for Independence will also be considered.

Hist. s103. Commercial Geography (Commercial and Industrial). Five hours a week. Three credits. Mr. Barnhardt. 8 M. T. W. T. F. Pe. 5.

This course is designed to prepare teachers of geography in the high schools as provided for in the Plan of High School Reorganization, as well as for students in the School of Science and Business. Geographical conditions affecting industries, production, and commerce of the world; development and relations of commercial areas to location and availability of resources; markets and transportation routes.

Hist. s201c. Contemporary Europe. Five hours a week. Three credits. Mr. Barnhardt. 9 M. T. W. T. F. Pe. 5.

This course deals with the economic, social, and political developments in Europe from 1870 to the present time. Special emphasis is laid upon

the causes of the World War. The war is studied in outline and attention is given to post-war conditions.

Hist. s200. American National Government. Five hours a week. Three credits. Mr. Lockmiller. 10 M. T. W. T. F. Pe. 1.

This course gives a survey of the historical development, the Constitution, the organization, powers, and the actual operations of our national government. Special emphasis is given to present-day conditions and movements in our government and political life.

***Hist. s303. History of North Carolina.** Five hours a week. Three credits. Prerequisite: History 101. Mr. Barnhardt. 11 M. T. W. T. F. Pe. 5.

The purpose of this course is to give the teachers of North Carolina and others a general view of the political, economic, and social development of North Carolina from colonial beginnings to the present day. A brief survey will be made of the settlement of North Carolina, the various racial groups which colonized, agriculture, industry, and commerce in the colonial era, and the relations of the province to England. A more detailed study will be made of North Carolina between the Revolution and the Civil War, emphasis being given to North Carolina and states' rights, social conditions, slavery and the free Negro, agriculture and industry, and the beginnings of public school education. Particular emphasis will be placed on the recent development of the State, the rise of textile, tobacco, and other industries, the development of agriculture, public schools and higher education, good roads, and other factors in recent North Carolina progress.

Hist. s322. Contemporary United States, 1914-1935. Five hours a week. Three credits. Mr. Lockmiller. 12 M. T. W. T. F. Pe. 1.

The administration of Woodrow Wilson, the World War, post-war problems, and political, social, and economic affairs to the present date, including a study of the New Deal.

HORTICULTURE

Hort. s102. Plant Propagation and Nursery Practice. Three credits. Mr. Randall. By arrangement.

Study of methods and practice in seedage, cuttage, separation and division, budding and grafting. Cultural principles and practices in growing nursery stock.

Hort. s105. Small Fruit Culture. Three credits. Mr. Gardner. By arrangement.

A course in the culture and production of small fruits, including strawberries, dewberries, blackberries, blueberries, raspberries, currants, and grapes.

Hort. s209. Vegetable Production. Three credits. Mr. Randall. By arrangement. Pk. 308.

Location, soil preparation, fertilization, irrigation, and general culture applicable to commercial vegetable production.

Hort. s228. Home Floriculture. Three credits. Mr. Randall. By arrangement. Pk. 308.

Principles and methods of growing garden flowers and house plants, including varieties and their adaptability.

There will be the equivalent of two lectures and one two-hour laboratory for each of the above courses.

LANDSCAPE ARCHITECTURE

L. A. s203. Plant Materials. Two credits. Mr. Weaver. By arrangement.

Ornamental plants, their characteristics of use in planting design for home, school, and church grounds, and farmstead landscapes.

L. A. s217. Annual and Herbaceous Perennial Plants. Two credits. Mr. Weaver. By arrangement.

Herbaceous and annual plants, their height, habits of growth, texture, season, color, and other characteristics determining use in planting design.

MATHEMATICS

Math. s100a. Mathematical Analysis. Five hours a week. Three credits. Prerequisite: Algebra to quadratics and Plane Geometry. Mr. Fisher. 11-12 M. T. W. T. F. Page 209.

Review of elementary topics such as factoring, fractions, simple equations, exponents and radicals. Topics then taken up are: quadratic equations, solution of higher degree equations, simultaneous quadratic equations, logarithms, the binomial theorem, and the elementary theory of probability.

Math. s100b. Mathematical Analysis. Five hours a week. Three credits. Mr. Fisher. 11-12 M. T. W. T. F. Page 209.

The study of trigonometric functions with their applications to the solution of the right and oblique triangles, with numerous problems. Also, a brief study of trigonometric equations and identities, and inverse functions.

Math. s100c. Mathematical Analysis. Five hours a week. Three credits. Mr. Williams. 9-10 M. T. W. T. F. Page 101B.

Simple and compound interest, annuities, sinking funds, and amortization and valuation of bonds, and other applications.

Math. s101. Algebra. Twelve hours a week. Six credits. Mr. Mumford. 11-1 M. T. W. T. F. S. Page 203.

Progressions, binomial theorem, undetermined coefficients, logarithms, compound interest and annuities, permutations and computations, the general theory of equations, and the solution of higher equations.

Math. s102. Trigonometry. Twelve hours a week. Six credits. Mr. Clarkson. 8-10 M. T. W. T. F. S. Page 203.

Definitions of trigonometric functions, derivations of formulæ, solution of plane and spherical triangles, and the solution of many practical problems.

Math. s103. Analytical Geometry. Twelve hours. Six credits. Prerequisite: Mathematics 101 and 102. Mr. Clarkson. 11-1 M. T. W. T. F. Page 101A.

Loci of equations, the straight line, circle, parabola, ellipse, hyperbola, and the general equation of the second degree.

Math. s201. Differential Calculus. Eight hours a week. Four credits. Prerequisite: Mathematics 103. Mr. Williams. 11-1 M. T. W. T. F. Page 101B.

An elementary course on the fundamental principles of the calculus, including the development of the formulæ for differentiation with their application to the problems in rates, maxima and minima, etc.

Math. s202. Integral Calculus I. Eight hours a week. Four credits. Prerequisite: Mathematics 201. Mr. Williams. 11-1 M. T. W. T. F. Page 101B.

Methods of integration, the study of the definite integral, with applications to problems in areas, volumes, surfaces, and lengths of arcs.

Math. s203. Integral Calculus II. Eight hours a week. Four credits. Prerequisite: Mathematics 202. Mr. Fisher. M. T. W. T. F. Page 209.

Centroids, radii of gyration and moments of inertia, problems in work and liquid pressure, double and triple integrals, infinite series, hyperbolic functions, and differential equations.

***Math. s341. The Teaching of High School Mathematics.** Ten hours a week. Five credits. Prerequisite: Ed. 101, 203, 212, 213, and 20 credits in Mathematics. Mr. Mumford. 11-1 M. T. W. T. F. P. 203.

A comprehensive view of the materials of high school mathematics will be accompanied by a discussion of the selection and use of textbooks and supplementary helps. Practice will be given in the construction and use of written examinations, and the comparative merits of standard tests will be considered. Attention will be given to adapting both the content and the methods of procedure to the needs of various groups.

MODERN LANGUAGES

German

M. L. s108. Elementary German Prose. Five hours a week. Three credits. Mr. Ballenger. 10 M. T. W. T. F. Pe. 211-212.

This course consists of reading and translation of very simple German, along with lectures on the structure of the German language and word composition. The work is conducted in such a manner that the student's choice in reading material is a matter of individual need. Daily reports and conferences are required.

M. L. s203. Intermediate Scientific German. Five or ten hours a week. Three or six credits. Mr. Hinkle. 10 M. T. W. T. F. Pe. 211-212.

This course consists of a study of relatively simple scientific German literature. It is conducted by means of lectures and reports in such manner that the student's choice of reading material is a matter of individual need. Daily reports and conferences are required.

French

M. L. s107. Elementary French Prose. Five hours a week. Three credits Mr. Hinkle. 9 M. T. W. T. F. Pe. 211-212.

This course consists of reading and translation of easy French, along with lectures on the structure of the French language, diction, and pronunciation. The work is conducted in such manner that the student's choice in reading material is a matter of individual need. Daily reports and conferences are required.

M. L. s211. Introductory Scientific French. Five or ten hours a week. Three or six credits. Mr. Ballenger. 9 M. T. W. T. F. Pe. 211-212.

This course consists of a study of simple scientific French literature. It is conducted by means of lectures and reports in such manner that the student's choice of reading material is a matter of individual need. Daily reports and conferences are required.

M. L. s313. French Prose Masterpieces. Five hours a week. Three credits. Mr. Hinkle. 11 M. T. W. T. F. Pe. 211-212.

This course consists of a study of outstanding masterpieces in French literature. It is conducted by lectures and reports in such manner as to give a brief outline of French literary development. Daily conferences and reports are required.

Spanish

M. L. s111. Elementary Spanish Prose. Five hours a week. Three credits. Mr. Hinkle or Mr. Ballenger. 8 M. T. W. T. F. Pe. 211-212.

This course consists of reading and translation of easy Spanish, along with lectures on the structure of the Spanish language, diction, and pronunciation. The work is conducted in such manner that the student's choice in reading material is a matter of individual need. Daily reports and conferences are required.

PHYSICAL EDUCATION

P. E. s101. Fundamental Activities. Four hours practice. One credit. Mr. Miller. By arrangement. Gym.

Freshman requirement. Individual health and physical efficiency of each student, based on standard athletic, gymnastic, and efficiency tests.

P. E. s102. Sports Activities. Four hours practice. One credit. Mr. Miller. By arrangement. Gym.

Sophomore requirement. Election permitted in the popular sports for healthful exercise and a fair degree of skill in them.

P. E. s111. Games and Organized Play. Three hours theory, two hours practice. Two credits. Mr. Miller. By arrangement. Gym.

The organization and administration of playgrounds. Games suitable for the playground, elementary and secondary schools, ranging from the simplest primary school games to semi-organized sports and dancing.

This course is open to women.

P. E. s114. Football—Theory and Practice. Five hours a week, three hours practice. Three credits. Mr. Miller. By arrangement. Gym.

This course will cover the organization of the theory and practice of football coaching.

P. E. s115. Basketball—Theory and Practice. Five hours theory, three hours practice. Three credits. Mr. Miller. By arrangement. Gym.

This course will cover the organization of the theory and practice of basketball coaching.

PHYSICS

Physics s110. General Physics. Four or eight credits. Five hours class work, two two-hour laboratory periods each week for four credits. Double this for eight credits. Staff. 9 M. T. W. T. F.; 2-4 M. W.; 9-11 M. T. W. T. F.; 2-4 M. T. W. T. P. & E. 113.

A course covering the whole field in condensed form. It is especially designed for high school teachers, containing method as well as subject matter. The materials discussed give a broad background of additional subject matter with which to supplement a like course given in high school. It is given in halves taken simultaneously. At nine, force and machines, heat and weather, sound and the physics of music are given. At ten, light and the general field of electricity and the electrical nature of matter are given. Either half may be taken and four college credits earned, substituting for the corresponding term of Physics 101 or 103. Two afternoons of laboratory accompany each half.

Physics s104. Physics for Engineers. Four or eight credits. Staff. 8 M. T. W. T. F.; 2-4 M. W.; 8-10 M. T. W. T. F.; 2-4 M. W. P. & E. 212.

An advanced treatment of General Physics. Second- or third-term work may be taken or the two terms taken simultaneously.

Physics s107. Descriptive Astronomy. Five hours a week. Three credits. Mr. Heck. 12 M. T. W. T. F. P. & E. 212.

A descriptive course covering the most interesting elements in the study of the sun and planets and the stars. The modern interpretation of the universe as a whole given in this course makes it valuable as a background to a student or teacher of any subject. Observation periods, using the telescope on top of the physics building, will be substituted at times for class lectures.

***Physics s212. Photography.** Four hours class work and two laboratory periods each week. Three credits. Mr. Meares. 7 M. T. W. T. Laboratory by arrangement.

A general course in photography covering cameras and lenses, principles of exposure, development and printing; lantern slides, micro-photography, projection printing, and color photography.

Physics s411. Research.

Graduate courses in physics will be given if there is sufficient demand.

POULTRY SCIENCE

Poul. s305. Poultry Diseases. Three credits. Mr. Gauger or Mr. Dearstyne. By arrangement. R. 208.

Common diseases of poultry as found in North Carolina; seasonal anticipation of diseases; autopsy methods and practice; poultry sanitation.

Poul. s310. Advanced Poultry Production. Three credits. Mr. Dearstyne or Mr. Williams. By arrangement.

Course especially adaptable to vocational teachers in agriculture. Includes poultry judging, nutrition, and commercial plant management.

Poul. s407. Poultry Research. Three credits. Staff. By arrangement. R. 208.

Problems in poultry nutrition, diseases, marketing, and breeding may be undertaken. Such problems shall be conducted on a definitely outlined basis acceptable to the department and the results shall be summarized in the form of an acceptable basis.

PSYCHOLOGY

Psychol. s101. Introduction to Psychology. Five hours a week. Three credits. Mr. Garrison. 11 M. T. W. T. F. H. 5.

A study of the structure, function, and laws of human behavior, with applications of psychology to everyday life.

Psychol. s203b. Educational Psychology. Five hours a week. Three credits. Required of students in Education; elective for others. Mr. Garrison. 10 M. T. W. T. F. H. 5.

(For a description of course, see Ed. 203b.)

Psychol. s376. Psychology of Adolescence. Five hours a week. Three credits. Mr. Garrison. 9 M. T. W. T. F. H. 5.

A study of the nature, growth, social development, and interests of adolescent boys and girls. Especially designed for those concerned with the organization and direction of group activities for boys and girls in rural and industrial centers.

RELIGION

Rel. s103. Social Ethics. Five hours a week. Three credits. Mr. Hicks. 10 M. T. W. T. F. Pe. 204.

Historical and psychological study of moral nature and moral progress; origin and development of the social conscience; and changing ethics in certain aspects of social life.

Rel. s201. Comparative Religion. Five hours a week. Three credits. Mr. Hicks. 12 M. T. W. T. F. Pe. 204.

History, general characteristics, and social significance of the great ethnic religions of the world, characteristics of the living religions.

SOCIOLOGY

Soc. s102. Introductory Sociology. Five hours a week. Three credits. Mr. Hicks. 11 M. T. W. T. F. Pe. 204.

This course offers an inductive introduction to the field of sociology by taking up a number of social problems which confront every community. The outstanding problems to be considered are: poverty, crime, divorce, immigration, population, and race problems. This course, therefore, is a natural introduction to the sociology courses which deal more directly with social theory.

Soc. s103. General Sociology. (First term.) Five hours a week. Three credits. Mr. Winston. 10 M. T. W. T. F. Pe. 207.

The course deals with the basic principles of sociology, then analyzes the various environments that affect man and his behavior.

Soc. s300. Criminology. Five hours a week. Three credits. Mr. Winston. 9 M. T. W. T. F. Pe. 207.

This course will take up the causes and conditions leading to crime and study the methods of handling criminals. It will discuss the influence of various factors in producing criminal behavior, emphasis being placed on prevention rather than cure.

Soc. s306. The American Family. Five hours a week. Three credits. Prerequisite: Soc. 103 and three additional term credits in Sociology. Mr. Winston. 8 M. T. W. T. F. Pe. 207.

A study of family relationships, of the relationship between husband and wife, parents and children, with particular emphasis on the development of personality. The effect of present-day social changes upon the family, and the changes in family life as a result will be studied. Discussion of various efforts to stabilize the family. The part habits play in successful and non-successful marriages will also be discussed.

SOILS

Soils s310. Fertilizers. Four hours of class and one laboratory period a week. Three credits. Mr. Clevenger. 10 M. T. W. T. Laboratory to be arranged. Pt. 16.

A study of the sources, characteristics, and utilization of fertilizers.

Soils s315. Soils of North Carolina. Four hours of class, one laboratory period a week. Three credits. Mr. Clevenger. 11 M. T. W. T. Laboratory to be arranged.

A study of the origin, characteristics, distribution, and utilization of North Carolina soil types.

Soils s319. Fertilizer Experimentation. Three credits. Mr. Lutz. By arrangement.

A study of methods of determining the fertilizer needs of different crops on different soil types.

Soils s430. Soil Research. Two to five credits. Mr. Clevenger and Mr. Lutz. By arrangement.

TEXTILES

The Textile School at State College occupies a place of merited leadership in this country. A state with North Carolina's rank in the textile field needs to take advantage of the latest developments in research and training in this, North Carolina's largest industry. The Textile School offers its equipment and faculty to the people of the State during the Summer School.

Courses in textiles designed for men who are employed in the manufacturing plants, as well as courses for teachers who are employed in the textile communities, will be given. These courses will be arranged on a unit basis in order to meet the needs of the various groups who may wish to come to the College for different periods.

If there is sufficient demand, a second summer session of textile courses will be offered from July 22 to August 29. Students interested in attending this special session should communicate with Dean Thomas Nelson of the Textile School as early as possible, but not later than July 10. The courses given will depend upon the requests received.

Tex. s102. Yarn Manufacture I. Three credits. Mr. Hilton. By arrangement. Textile Building.

Mixing of cotton, description and setting of openers, pickers, and cards. Production, speed, and draft calculations.

Tex. s103. Yarn Manufacture Laboratory I. One or two credits. Mr. Hilton. By arrangement. Textile Building.

Operation and fixing of machines. Grinding and setting cards.

Tex. s104. Knitting I. Two credits. Mr. Lewis. By arrangement. Textile Building.

Selection and preparation of knitting yarns, knitting mechanisms, plain and rib knitting machines, circular ribbers, and circular automatic machines.

Tex. s105. Knitting Laboratory I. One, two, or three credits. Mr. Lewis. By arrangement. Textile Building.

Operation of machines, practical experiments, hosiery analysis, topping, transferring, and looping.

Tex. s106. Fabric Structure and Analysis. Two or four credits. Mr. Lewis. By arrangement. Textile Building.

Systems of numbering woolen, worsted, silk, linen, rayon, and cotton yarn. Plain, twill, and sateen weaves. Ornamentation of plain weaves; wave designs; pointed twills; diamond effects; plain and fancy basket weaves; warp and filling rib weaves.

Analyzing plain, twill, sateen, and other fabrics made from simple weaves, ascertaining the number of ends and picks per inch in sample. Fabric analysis calculations.

Tex. s107. Power Weaving. Two credits. Mr. Nelson. By arrangement. Textile Building.

Construction of auxiliary motions on plain looms. Cams and their construction. Drop-box loom construction. Methods of pattern chain building. Construction and value of pattern multipliers. Timing of drop-box motion, and other studies.

Tex. s108. Power Weaving Laboratory. One or two credits. Mr. Hart. By arrangement. Textile Building.

Operating and fixing of plain, automatic, and drop-box looms. Pattern chain building for drop-box looms.

Tex. s109. Fabric Testing. One credit. Mr. Shinn. By arrangement.

Testing fabrics for strength. Effect of heat upon fabrics. Effect of regain upon tensile strength. Elasticity of fabrics. Micrometer and calculated tests for fabric thickness.

Tex. s115. Textiles for Teachers. Five hours a week. Three credits. Mr. Lewis. S M. T. W. T. F. Textile Building.

This course is designed to give a fundamental knowledge of fabrics. It will include a study of various fabrics and their selection and adaptability to different uses. Various methods of distinguishing fabrics made from different materials, such as cotton and rayon, cotton and wool, wool and silk, and other combination of yarns, will be given and analysis made of the fabrics. In addition, a general survey of the various processes through which cotton passes in its transition from the raw material to the finished product will be studied.

Tex. s201. Yarn Manufacture II. Three credits. Mr. Hilton. By arrangement. Textile Building.

Construction of draw frames; sliver lapper; ribbon lapper, comber; mechanical and electrical stop motions, description and setting of the different parts; weighting of rolls; types of roll covering; care of machines; fly frame builder and differential motions.

Tex. s202. Yarn Manufacture Laboratory II. One, two, or three credits. Mr. Hilton. By arrangement. Textile Building.

Operation and fixing of draw frames; sliver lappers; ribbon lapper; comber and fly frames. Changing of hank roving and the setting of rolls and speeder motions.

Tex. s205. Fabric Design and Analysis I. Three or six credits. Mr. Hart. By arrangement. Textile Building.

Construction of fancy weaves, such as broken twills, curved twills, entwining twills, granite weaves. Imitation leno; honeycomb weaves; fabrics backed with warp or filling; fabrics ornamented with extra warp or filling; combining weaves together to produce new patterns.

Analyzing samples of fancy fabrics for design; drawing in draft, reed, and chain plan. Calculating particulars to reproduce fabric from data obtained from sample.

Tex. s207. Dobby Weaving. Three credits. Mr. Nelson. By arrangement. Textile Building.

Methods of drawing in and starting up cotton and rayon warps. Setting of harness shafts. Selection of springs or spring jacks. Construction and methods of fixing single and double index dobbies. Methods of pattern-chain building.

Tex. s208 or s209. Dobby Weaving Laboratory I or II. One, two, or three, or six credits. Mr. Hart. By arrangement. Textile Building.

Preparation of warps for weaving cotton and rayon fabrics on dobby looms; starting up warps in looms; fixing single and double index dobbies; pattern chain building; operation of dobby looms.

Tex. s301. Yarn Manufacture IV. Three credits. Mr. Hilton. By arrangement. Textile Building.

Spinning; spooling; twisting. Description and setting of different parts. Builder of motions for warp and filling. Bobbin holders, thread guides, traverse motions. Ply yarns. Calculations for twist, speed, and production.

Tex. s309. Cotton and Rayon Fancy Design I. Three, six, or nine credits. Mr. Shinn. By arrangement. Textile Building.

Designing fancy and jacquard fabrics. These fabrics include tablecloths, figured double plain; matelasse, velvet, corduroy. Leno weaves with one, two, or more sets of doups. Combinations of plain and fancy weaves with leno. Methods of obtaining leno patterns. Methods of making original designs by combinations of color, weave, and sketches. Designs for table napkins, table covers, dress goods, draperies.

Tex. s311. Fabric Analysis. Two credits. Mr. Shinn. By arrangement.

Analyzing samples of cotton, wool, worsted, linen, rayon, and silk fabrics for size of yarns, ends and picks per inch, weight of warp and filling, so as to accurately reproduce samples analyzed. Obtaining design, drawing in draft, chain, and reed plan for fancy fabrics, such as stripes, checks, extra warp and extra filling figures, leno fabrics, jacquard fabrics, draperies.

ZOOLOGY

Zool. s101. General Zoology. Five recitations, four hours laboratory. Four credits. Mr. Bostian. 9 M. T. W. T. F. Laboratory arranged. Z. 7.

A study of the structures and functions of the vertebrates, with special reference to man and the rat.

Zool. s103. Human Physiology. Five recitations, four hours laboratory. Three credits. Mr. Bostian. 8 M. T. W. T. F. Laboratory arranged. Z. 8.

A study of the functions of the human body, designed especially for teachers.

****Zool. s204. Economic Entomology.** Five recitations, four hours laboratory. Four credits. Mr. Mitchell. 8 M. W. F. Laboratory arranged. Z. 7.

A general study of the insects, including their economic importance, with emphasis upon control of the more important local species.

Zool. s304. Genetics. Four credits. Mr. Bostian. By arrangement. Prerequisite: Bot. 101 and 102 or Zool. 101.

Basic principles of heredity and variation. Students carry on and analyze breeding experiments, analyze inheritance in various animals and plants.

Courses for Graduates Only

Zool. s403. Research in Zoology. Three credits. Mr. Metcalf, Mr. Mitchell, Mr. Bostian. By arrangement. Prerequisite: Eighteen term credits in Zoology.

The student will be assigned a problem in development morphology, ecology, physiology, genetics, or taxonomy.

****Not offered summer 1936. To be offered summer 1937.

THE WOMAN'S COLLEGE

OF THE

UNIVERSITY OF NORTH CAROLINA

GREENSBORO, N. C.

July 9–July 17

The chief purpose of the Summer Session is to serve students and teachers of North Carolina to the greatest possible extent at the least possible cost.

Distinctive features of the Summer Session at this division of the University are:

1. Courses in elementary and high school education.
2. Full home economics curriculum.
3. New courses in Art.
4. Regular and special courses in Music.
5. Observation and Nursery School.
6. Full social and recreational program under expert leadership.

Courses will be offered for college students who wish to advance their standing or make up work.

Expenses are as follows:

Fees and charges	$20.00
Board, room, and laundry	33.00
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The Summer Session (first term, June 11-July 22; second term, July 23-August 29) offers 300 undergraduate and graduate courses in Astronomy, Bacteriology, Botany, Chemistry, Comparative Literature, Economics, Commerce, Education, English, Fine Arts, Geology, Physics, Physical Education, Political Science, Psychology, Public Administration, Romance Languages, Rural Social Economics, Sociology, and Zoology, by regular members of the teaching staff and distinguished visiting professors.

Numerous special courses, conferences, seminars, and institutes in the fields of the Social Sciences, Public Administration, Political Science, Music, and Education and Public Relations will be held during the first term of the Summer Session.

EXPENSES

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Room rent in University (other than Spencer Hall or the Graduate Clubs)	$ 7.50
Room rent in Spencer Hall and Graduate Woman's Club:	
Single room	22.50
Double room	15.00
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The average cost for board in Chapel Hill cafeterias, cafes, and boarding houses should be about $6 per week.

OTHER EXPENSES

Registration fee for each student	12.50
Course fee for each quarter-hour credit per term	2.25

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STATE COLLEGE RECORD

VOL. 36 JUNE, 1937 No. 6

Summer Session

JUNE 14—JULY 23, 1937

Announcement of Courses

NORTH CAROLINA STATE COLLEGE
OF
AGRICULTURE AND ENGINEERING
OF THE
UNIVERSITY OF NORTH CAROLINA
STATE COLLEGE STATION
RALEIGH

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Assistant Professor of Mathematics

THOMAS NELSON, D.Sc. — *Textiles*
Dean of the Textile School

JEHU DEWITT PAULSON, B.F.A. — *Architectural Engineering*
Assistant Professor of Architectural Engineering

GLENN ORVICE RANDALL, B.S., M.S. — *Horticulture*
Associate Professor of Horticulture

MACON ROGERS ROWLAND, B.S. — *Mechanical Engineering*
Instructor in Mechanical Engineering

ROBERT HENRY RUFFNER, B.S., M.S. — *Animal Husbandry*
Professor of Animal Husbandry and Dairying

GEORGE HOWARD SATTERFIELD, A.B., B.S., M.A. — *Chemistry*
Associate Professor of Biochemistry

L. WALTER SEEGERS, A.B., A.M. — *History*
Instructor in History

WILLIAM EDWARD SHINN, B.S., M.S. — *Textiles*
Associate Professor of Weaving and Designing

CLARENCE B. SHULENBERGER, A.B., A.M. — *Business Administration*
Associate Professor of Accounting

IVAN VAUGHAN D. SHUNK, A.B., A.M., Ph.D. — *Botany*
Associate Professor of Botany

GEORGE KELLOGG SLOCUM, B.S., M.S. — *Forestry*
Assistant Professor of Forestry

GEORGE WALLACE SMITH, B.S., M.S., D.Sc. — *Civil Engineering*
Associate Professor of Engineering Mechanics

JASPER LEONIDAS STUCKEY, A.B., A.M., Ph.D. — *Geology*
Professor of Geology

FRED BARNETT WHEELER, B.E., M.E. — *Mechanical Engineering*
Associate Professor of Furniture Manufacturing and Superintendent of Shops

HARVEY PAGE WILLIAMS, B.A. — *Mathematics*
Assistant Professor of Mathematics

NORWOOD WADE WILLIAMS, B.S., M.S. — *Poultry*
Assistant Professor of Poultry

ARTHUR JOHN WILSON, B.S., M.S., Ph.D. — *Chemistry*
Professor of Analytical Chemistry

SANFORD RICHARD WINSTON, B.A., Ph.D. — *Sociology*
Professor of Sociology

SUMMER SESSION, 1937

In accordance with the plans that are being carried out in the consolidation of the Greater University of North Carolina, the summer sessions of the University at Chapel Hill, of the State College of Agriculture and Engineering at Raleigh, and the Woman's College at Greensboro have been united into one organization. The summer terms are conducted as an integral part of the regular college year under the guidance of the regular administrative staffs.

The work of the three divisions will be arranged according to function. Elementary Education will be the distinctive field of work at Greensboro; Agricultural, Vocational, and Technological training at State College; and Secondary Education and Graduate work the distinctive field at Chapel Hill.

There will be a single session of six weeks at all three of the institutions, with a second term of six weeks at Chapel Hill only. The work of the three institutions is being correlated and coordinated in such a way that the students and teachers of the State may be better served than hitherto.

The twenty-fourth Summer Session of the North Carolina State College of Agriculture and Engineering of the University of North Carolina begins Monday, June 14th, and closes Friday, July 23rd.

COLLEGE CREDIT

Beginning with 1924-1925, the regular session of the State College was divided into three terms; consequently "credit," as used throughout this bulletin, refers to term credit, or twelve weeks work, unless otherwise designated. Therefore, in order for the college-credit courses to count for a full term's work, they will be given, if for five credits, ten periods a week; if for three credits, five periods a week. Since, however, no student will be allowed to take more than eighteen hours of work per week without special permission, this restriction will prevent students taking more than one ten-period course.

It is important to notice that teachers are required to take at least fifteen hours weekly in order to receive credit for one summer session. Additional credits may be taken by students if they have points to justify, and by teachers upon approval. In no case will a student be allowed more than twelve credits of work.

AUDITORS

Students not carrying a full load, and others who receive permission, may audit classes by paying a $5.00 fee for each class attended. This does not permit the individual to receive credit for the course, and he is not permitted to take part in class discussions or receive any individual assistance from the teacher.

ADMISSION OF WOMEN

A recent ruling of the Board of Trustees does not allow this institution to accept women students until they have completed a minimum of forty-eight semester hours at some other college. It will therefore be necessary for women students to present credentials on or before registration day indicating they have the required amount of advance standing.

DEGREES IN EDUCATION

No degrees in Education will be awarded after July, 1938, except in Agricultural Education and Industrial Arts Education. Teachers planning to receive their degrees at this institution in other fields of Education should arrange to complete their work by that time.

TEACHING CERTIFICATES

We have received the following information from the Division of Certification of the State Department of Public Instruction which will be of interest to all teachers attending summer school to raise their certificates:

"As of July 1, 1939, and thereafter, the Class A Certificate built up from a lower grade certificate will be based upon a satisfactory completion of the requirements for a degree from a standard college, along with, or in addition to, the specific certificate requirements. It is suggested that those teachers in service who may not reasonably be expected to qualify for the Class A Certificate prior to July 1, 1939, arrange their program of studies in cooperation with the institution from which they would like to obtain the degree."

The State Department of Public Instruction is anxious to administer in a most effective way all certificate problems growing out of summer school attendance. The enterprise, however, is a cooperative one, involving the individual teacher, the institution conducting the summer school, and the State Department of Public Instruction. Looking toward a most satisfactory administration of these problems, the following general observations are made:

1. All teachers should fill out the back of the summer school card, giving the exact name which the certificate carries, the kind of certificate held, the serial number, et cetera. A teacher's registration should not be considered complete without this information.
2. Teachers who are expecting a change in their certificate for 1937-38 as a result of their summer school work, should wait for four weeks before making any inquiry of the State Department of Public Instruction. Last year about 11,000 summer school records were handled. It should be reasonable to assume a month's time would be required for handling these records and issuing the certificates growing therefrom.
3. Teachers who are expecting their certificates to be raised as a result of summer school attendance should not send their old certificates to the State Department of Public Instruction. This is not necessary for the issuance of the new certificate.
4. Teachers should not send to the State Department of Public Instruction their personal reports of summer school work. The report must come direct from the institution, and will be sent by the institution if the teacher has properly registered.
5. Institutions should send the reports to the State Department of Public Instruction as promptly as possible after the close of the summer school. At present there is considerable variation among the institutions in their practice with reference to this point.

FEES AND EXPENSES FOR SIX-WEEKS PERIOD

All fees and other charges are payable in advance or upon registration, and all checks should be payable to North Carolina State College.

Room Rent (per person)	$ 7.50
Board at College Cafeteria (estimate)	30.00

College Fees

Registration Fee	$ 3.00
Course Fee (for each quarter hour of credit)	3.00
Medical Fee	1.00
Laboratory Fee for students taking surveying	2.00

All students occupying a room alone will be charged $10.00.

There will be a key deposit of twenty-five cents, which amount will be refunded when the key is returned.

There will be a late registration fee of $2.50 for all students who do not complete their Registration on Monday, June 14th.

BOARD

The College maintains an excellent cafeteria where charges are reasonable. Students can purchase meal tickets at a reduced rate, so that board for the six-weeks period will be approximately $30.00.

ROOMS

Students will be assigned to rooms upon their arrival at the College. In case it is desired to change the room assignments, permission to do so must first be obtained from the Superintendent of Buildings. In no case may a room be taken until it has been regularly assigned.

The College rooms are supplied with necessary furniture. Each student, however, should bring towels, sheets, one pillow and two pillowcases, and two bedspreads for a single bed.

REGISTRATION

All registrations will be conducted in Frank Thompson Gymnasium beginning at 9 a.m. on June 14th. Students are expected to report in person on Monday, June 14th, so that they may begin class work on the morning of Tuesday, June 15th, at 8 o'clock. Deans and Directors of Instruction will be present to advise students relative to courses. The administration reserves the right to cancel any course for which the registration is less than eight. The final date for completing registration is 5:00 p.m. Wednesday, June 16th.

DIPLOMAS

Students expecting to receive a degree at the end of the summer session should come to the Office of Registration early in the session, to be sure they are meeting all the requirements for graduation.

LIBRARY FACILITIES

In addition to the resources of the D. H. Hill Library, the facilities of the Olivia Raney Library and the State Library will be available to Summer School students for reference work.

SOCIAL AND RECREATIONAL FACILITIES

A reception for students and faculty, followed by other social and recreational events, serve to foster a congenial spirit in the student body. Weekly assembly periods with varied and interesting programs; voluntary student musical organizations; a weekly open forum for the discussion of timely subjects; the social center at the Y. M. C. A.; weekly dances; and

supervised recreation, consisting of swimming, tennis, baseball, volleyball, basketball, and handball, provide a wide range of recreational activities.

Being the capital of one of the original thirteen states, Raleigh is unusually rich in historical collections, fine public buildings, and interesting places and memorials. It is interesting, also, for its churches, its schools, its hotels, its office buildings, and its growing commercial and industrial activities. Opportunities will be given the students to visit the places of interest.

The various churches welcome all Summer School students to Sunday school and church services, and their pastors have taken a very friendly interest in the morning services at the College auditorium. Raleigh will be found in all respects a delightful place of residence.

SPECIAL SHORT COURSES

During the summer the College offers several short courses. These courses are designed to be of practical value to people already employed in particular fields of work.

The total cost of any of these short courses, including cost of registration and room rent, will not exceed $3.00. Board is not furnished, but can be secured at the College Cafeteria.

For the summer of 1937 the North Carolina State College is offering the following short courses. Others will be offered in future summer schools whenever there are sufficient demands. These courses do not give college credit.

Short Course for Janitors and Firemen—August 9-13, 1937

The Mechanical Engineering Department of North Carolina State College, as a feature of the summer session, conducts a short course of six days for white janitors and firemen, teaching the fundamental principles of combustion, how to fire economically, and giving general instructions about heating systems and operation of the plant. The mornings are given to lectures and talks by members of the College faculty and representatives from other State departments, and the afternoons are given over to the practical problems and to inspection trips to different schools. The 1937 school will be held the week of August 9-13. Applications for admission should be sent to Professor L. L. Vaughan, North Carolina State College, Raleigh, North Carolina.

Short Course for Waterworks Operators—July 26-30, 1937

The Chemical Engineering Department of the North Carolina State College conducts a three-day short course for waterworks operators. The chemical background of water treatment will be presented simply, definitely, and comprehensively, with the purpose of making clear to waterworks men the nature of the chemicals used and their reactions, the principles involved in the chemical treatment of water for municipal and for industrial use, and an explanation of the control processes. Each individual will be provided with a short lithoprinted book of complete lessons studied, every lesson accompanied by experimental demonstrations to make the study concrete and practical. The course is designed to present in a clear practical way the fundamental principles of chemical treatment of water so as to give a measure of understanding and assurance in the minds of waterworks men in their waterworks practice. Classes will be held from 8 a.m. to 1 p.m. and from 2 p.m. to 4.30 p.m. Application for admission should be sent to Professor E. E. Randolph, North Carolina State College, Raleigh, North Carolina.

Short Course for Gas Plant Engineers and Operators
August 2-6, 1937

The Chemical Engineering Department of the North Carolina State College conducts a three-day short course for gas plant engineers and operators. The course will include a comprehensive study of the fundamental principles of the manufacture of municipal and of industrial gas, the chemical reactions and principles involved, engineering problems, and control methods, together with clear, simple, and practical study of chemical nature of commercial gases, and of associated products; maintenance of uniform quality of product, prevention of losses and operation difficulties, and the chemical background of the various phases of gas production. The course is intended to be of definite help to operating men in gasworks. The class work will be fully illustrated with practical experiments. Classes will be held from 8 a.m. to 1 p.m. and from 2 p.m. to 4:30 p.m. Application for admission should be sent to Professor E. E. Randolph, North Carolina State College, Raleigh, North Carolina.

COLLEGE PREPARATORY MATHEMATICS AND ENGLISH

There are a large number of students applying for admission who are deficient in the mathematics requirement for college entrance. This is particularly true of those students who desire to take engineering.

Tests conducted at this College for several years show conclusively that students poorly prepared in English have difficulty with all their major college studies. The College Preparatory Course in English will improve the student in the three most important aspects of English: reading, writing, and speaking.

Plane geometry is required of all freshmen for college entrance. Since many of the smaller high schools in the State do not offer this subject, it is given here so that students may enter college without conditions. Students cannot begin their freshman mathematics without this course.

Solid geometry is an entrance requirement for all engineering freshmen. It may be taken as an extra load during the second term of the freshman year. However, securing this training during the summer will be of great assistance to the student in his freshman year.

Many students having passed high school algebra are still poorly prepared for college mathematics. This is due to the short terms in the high school, overloaded teachers, and the fact that two or more years often elapse between taking high school algebra and entering college. A review course in algebra is offered to enable the student to secure a good foundation for his college mathematics.

In an effort to avoid these difficulties and to prepare students more thoroughly for freshman work, the College is offering this special college preparatory instruction in mathematics and English during the summer session. High school students planning to enter college are advised to consider this special instruction for the following reasons:

1. Better preparation means a better college record, which is often the basis of future recommendations and employment.

2. The removal of conditions which eliminate many undesirable irregularities.

3. Gaining experience in activities on a college campus which will aid in making a better start in September.

4. Lessening the possibility of scholastic failure in college.

The cost of this instruction is very reasonable. The estimate of expenses for the six weeks is as follows:

1. Room rent _____$ 7.50
2. Board in College Cafeteria (estimate)_____ 30.00
3. Registration fee _____ 3.00

To these items should be added the tuition charge for the courses as listed in the description of courses given below:

Eng. s50. College Preparatory English. Five hours a week. No college credit. Mr. Clark and staff. 8 M. T. W. T. F. Pu. 108. Tuition, $9.00.

A course in the fundamentals of reading, writing, and speaking. Special emphasis will be given to the needs of the individual students; conferences will be held for the purpose of directing the activities of the course.

Math. s1. Plane Geometry. Ten hours a week. No college credit. Staff. 11-1 M. T. W. T. F. P. 100. Tuition, $15.00.

The usual theorems and exercises of plane geometry, as given in the preparatory and high schools.

Math. s2. Solid Geometry. Five hours a week. No college credit. Staff. 10 M. T. W. T. F. P. 100. Tuition, $9.00.

Selected theorems and exercises, emphasizing particularly the practical aspects of the subject, such as the volumes and surfaces of prisms, pyramids, cylinders, cones, the frustums of pyramids and cones, and the sphere.

Math. s3. Elementary Algebra. Ten hours a week. No college credit. Staff. 8-10 M. T. W. T. F. P. 100. Tuition, $15.00.

The usual topics in elementary algebra, including addition, subtraction, multiplication, division, fractions, exponents and surds, graphs, and quadratic equations.

SUMMER INSTRUCTION IN FORESTRY

June 8 to August 14

The regular summer instructions in forestry for sophomores from June 8 to August 14 will be divided as follows:

Surveying—June 8 through June 26
Dendrology—June 28 through July 17
Mensuration—July 19 through July 31
Silviculture—August 2 through August 14.

The expenses for the entire period will be as follows:

Registration fee _____$ 5.00
For each credit scheduled _____ 3.00
Room and board based on last year's expenses (estimated) _____ 50.00
Bus fee _____ 17.00

The courses listed below are required and carry the regular college credit as indicated. The work is carried on entirely in the field and the class is responsible for its own program of camp routine. The students furnish their own board and any facilities other than the beds and housing. The registration in these courses is restricted to regularly enrolled students, unless a student is admitted as a special student under the same conditions that a special student would be allowed to take work in the regular courses.

Civil Engineering. s101. Surveying and Mapping. 3 Credits. Mr. Fontaine and Mr. Bramer.

Includes Boundary Surveys; Topographical Surveys and calculations of sections of the school forest areas. A complete topographic map including all field data is required.

For. s200. Mensuration. 3 Credits. Mr. Slocum and Mr. Miller.

The summer course in mensuration consists of two weeks field work. The work is carried on at the Hill Forest Camp or on the White Oak Pocosin. Practical work in timber cruising, stem analysis, mill studies, log scaling and collection of data for yield, volume and stand tables is carried out.

For. s203. Silviculture. 3 Credits. Mr. Miller and Mr. Slocum.

Classification of forest types. Reproduction studies. Establishment and measurement of sample plots. Correlation of depth of water table with site quality. This work is carried on at the White Oak Forest in the coastal section of North Carolina.

For. s211. Dendrology. 3 Credits. Mr. Slocum and Mr. Miller.

North Carolina is well suited for the study of dendrology. Representative trees of eastern United States are found here, scattered throughout the State. The summer course in dendrology consists of three weeks field work, one week being spent in each of the sections of the State, namely, the Mountains, Piedmont and Coastal Plain.

SPECIAL THREE WEEKS' COURSES FOR TEACHERS OF VOCATIONAL AGRICULTURE

June 14 to July 2

The State College Summer Session will again offer special three weeks' courses for teachers of vocational agriculture from June 14th to July 2nd. Courses will be offered in both subject matter and professional fields, and an effort will be made to arrange the work to meet the most urgent needs of teachers. A special announcement of these courses will be issued soon.

The expenses for each three weeks' term will be as follows:

Registration fee	$ 1.50
For each term credit scheduled	3.00
Room rent (each student—two in a room)	4.00
Board (estimate of cafeteria cost)	15.00

COURSES TO BE OFFERED IN THE SUMMER SESSION

ABBREVIATIONS FOR BUILDINGS

C.—Ceramic
C.E.—Civil Engineering
G.—Gymnasium
H.—Holladay
P.—Page.
P. & E.—Physics and Electrical Engineering Building
Pe.—Peele Hall
Pk.—Polk Hall
Pr.—Primrose
Pt.—Patterson
R.—Ricks
T.—Textile
Pu.—Pullen Hall
W.—Winston
Z.—Zoology Building

*The courses appearing hereafter with numbers 100, 200, and the 300 courses, which are starred, may be taken for undergraduate credit only.

AGRICULTURAL ECONOMICS

Agr. Econ. s260. Agricultural Economics. Five hours a week. Three credits. Mr. Forster. 10 M. T. W. T. F. R. 207. Prerequisite: Econ. 102 or 103.

A study of the economics of agricultural production; marketing of farm products; farm credit; land tenure and other major economic problems of the farmer.

Agr. Econ. s370. Agricultural Extension Methods. Three credits. Prerequisite: Senior or graduate standing. Dean Schaub and staff. Hours by arrangement.

A study of office record systems, office management, program determination, program development, reports and their use; and the obtaining, preparation, and use of material in Extension teaching.

Rur. Soc. s302. Rural Sociology. Five hours a week. Three credits. Mr. Matthews. 11 M. T. W. T. F. R. 207. Prerequisite: Soc. 103 or Econ. 102.

The culture, social organization, and social problems of rural people, with special reference to Southern rural life and proposed programs of development.

AGRICULTURAL ENGINEERING

Agr. Eng. s130. Farm Equipment. Three credits. Mr. Giles. By arrangement. Pt. 4.

A study of modern mechanical equipment for the farm.

Agr. Eng. s135. Terracing and Drainage. Three credits. Mr. Giles. By arrangement. Pt. 4.

A study of the different methods of disposing of surplus water and the prevention of erosion.

ANIMAL HUSBANDRY AND DAIRYING

A. H. s101. Animal Nutrition I. Three credits. Mr. Ruffner. By arrangement.

A study of animal nutrition; physiology of digestion; nutrients; feeding standards; economical and balanced rations. Practical work given.

A. H. s208. Dairying. Three credits. Mr. Haig. By arrangement.

The secretion, composition and properties of milk are studied, with factors influencing quality and quantity of milk and cream. The use of the Babcock tests, butter making on the farm, and operation of cream separators constitute the laboratory work.

A. H. s201. Swine Production. Three credits. Mr. Hostetler. By arrangement.

A study of adaptability of swine, with emphasis on feeding, judging, and management.

A. H. s202. Animal Breeding. Three credits. Mr. Ruffner. By arrangement.

A study of breeding and improvement of our animals; a first-hand study of successful breeding establishments and their problems.

Courses for Graduates Only

A. H. s402. Research Studies in Animal Husbandry. Three credits. Prerequisite: Eighteen credits in A. H. Staff. By arrangement.

An intensive study of experimental data.

BOTANY

Bot. s101. General Botany. Five recitations, four hours laboratory. Four credits. Mr. Shunk. 8 M. T. W. T. F., 2-4 M. W. Pt. 38.

Nature of the higher plant. A course presenting the fundamentals of the structure and function of the typical flowering plant.

Bot. s102. General Botany. Four credits. Mr. Shunk. 9 M. T. W. T. F., 2-4 T. Th. Pt. 38.

Survey of the plant groups. An introduction to the various major kinds of plants through the study of the life histories of types.

Bot. s203. General Bacteriology. Five recitations, four hours laboratory. Four credits. Mr. Shunk. Prerequisite: Botany 102 or equivalent. 11 M. T. W. T. F., 2-4 T. Th. Pt. 38.

An introduction to the principles of bacteriology. Laboratory work on modern cultural methods of handling and studying bacteria.

Courses for Graduates Only

Botany s402. Bacteriology: Special Studies. Three credits. Prerequisite: Bot. 203, 302. Mr. Shunk. By arrangement.

Special work on restricted groups of bacteria, such as nitrogen bacteria of the soil, milk organisms, and special groups of bacteria in water.

CHEMISTRY

Chem. s101. General Chemistry. Five hours in classroom and four hours in laboratory each week. Four credits. Equivalent to first term General Chemistry as given in the regular college year. Mr. Wilson or Mr. Satterfield. 8 M. T. W. T. F.; 1-5 T. W. 114.

Composition and properties of air and water. First principles of chemistry, such as atomic theory, laws of chemical combination, valence, chemical formulas and equations, oxidation, reduction, behavior of gases and solutions. Study of a few typical elements, such as oxygen, hydrogen, carbon, and nitrogen, together with their simpler compounds.

Chem. s103. General Chemistry. Five hours in classroom and four hours in laboratory each week. Four credits. Equivalent to second term General Chemistry as given in the regular college year. Mr. Satterfield. 10 M. T. W. T. F.; 1-5 Th. W. 102.

Particular attention given to chlorine, sodium, nitrogen, sulphur, fluorine, bromine, and their compounds. Study of such common substances as salt, lye, soda, carbon disulfide, prussic acid, petroleum, coal tar, acetylene; ammonia and its more interesting uses, such as in ice machines; sulphur dioxide in household refrigerators and as a bleaching and germicidal agent; compounds of nitrogen in warfare and agriculture. Introduction to acids, bases, salts, ionization, hydrolysis, equilibrium, the periodic law and the new theories of the structure of the atom.

Chem. s105. General Chemistry. Five hours in classroom and four hours in laboratory each week. Four credits. Equivalent to third term General Chemistry as given in the regular college year. Mr. Wilson or Mr. Satterfield. 11 M. T. W. T. F. Laboratory 1-5 T. W. 114.

Chemistry of clays, ceramics, glass, cement, soils, fertilizers, insecticides, lime, hard water, alloys, paints, storage batteries, photography, flames and explosions. Compounds and properties of phosphorus, arsenic, bismuth, silicon, boron, potassium, calcium, magnesium, zinc, aluminum, iron, tin, lead, nickel, copper, mercury, silver, gold, platinum, and other less common elements. Thermochemistry, colloids, and radioactivity.

Chem. s211. Qualitative Analysis. Two hours lecture, with four laboratory periods of three hours each per week. Equivalent to one term of college work. Five hours credit. Prerequisite: General Chemistry. Mr. Wilson. 10 T. Th.; laboratory to be arranged. W. 217.

A systematic study and separation of the metallic ions and non-metalic ions into their respective groups, their identification and the chemical reactions involved. The last two weeks will be given over to the complete analysis of mixed salts, compounds, and alloys.

Chem. s212. Quantitative Analysis, A. Two lectures and twelve hours laboratory. Equivalent to one term of college work. Five hours credit. Prerequisite: Qualitative Analysis. Mr. Wilson. Arrange. W. 217.

This work will deal with the theory and practice of making up and standardizing acids, bases, di-chromate and permanganate solutions, also the determination of the strength of unknown acids and bases, the analysis for the per cent purity of iron ores, oxalates, sulphates, magnesium, phosphate rock, etc.

Chem. s213 (214). Quantitative Analysis. Five credits. Mr. Wilson. Required of sophomores in Chemical Engineering and those majoring in Chemistry. Prerequisite: Chem. 211. By arrangement. W. 217.

A continuation of Chem. 212. Substances of more difficult nature are analyzed—minerals, steel, alloys, limestone, Paris green, etc.

Chem. s241. Introduction to Organic Chemistry. Four hours class and five hours laboratory. Four credits. Mr. Satterfield. Prerequisite: Chem. 101, 103, 105. 8 M. T. W. T., 2-4:30 M. W.

Hydrocarbons, alcohols, aldehydes, ketones, acids, ethers, esters, amino acids, and benzene derivatives; carbohydrates, fats, proteins, and related compounds; vitamins, enzymes, hormones, flavors.

††Chem. s321. Organic Chemistry. Four hours class and five hours laboratory for each four hours credit. Hours by arrangement.

††Not offered in 1937.

Staff. (This course has a total of 12 credits and continues through the regular college year.) Prerequisite: Chem. 101, 103, 105.

Aliphatic and aromatic compounds; practical applications; methods of preparation and purification of compounds.

†**Chem. s340. Food Products and Adulterants.** Five hours a week. Three credits. Prerequisite: Chem. 101, 103, 105, and 241. Mr. Satterfield. 9 M. T. W. T. F.

Food principles, cereals, starches, sugars, fats, milk and milk products, the packing house, food preservation, beverages, spices and condiments; food legislation.

†**Chem. s341. Vitamins.** Five hours a week. Three credits. Prerequisite: Chem. 241 or 321. Mr. Satterfield. 12 M. T. W. T. F.

Application of vitamin hypothesis to animal nutrition; history, nomenclature, properties, distribution, effects of deficiencies, and vitamin values.

†**Chem. s344. Food and Nutrition.** Five hours a week. Three credits. Prerequisite: Chem. 241 or 321. Mr. Satterfield. 10 M. T. W. T. F.

Carbohydrates, fats, proteins, amino acids, minerals, fiber, vitamins, and enzymes; nutritive value of food materials; digestion, food idiosyncrasy; acidosis and alkalosis.

ECONOMICS

Econ. s102. Introduction to Economics. Five hours a week. Three credits. Mr. Leager. 8 M. T. W. T. F. Pe. 108.

This course is designed for those students who do not feel able to devote more than one term to the study of economics.

It includes a study of the great fundamental economic laws which apply to all professions and occupations; a study of the production, distribution, and value of economic goods, and a study of the institutions, agencies, and ideals which dominate, operate, and control the manner, means, and methods of making a living.

Econ. s103a. General Economics. Five hours a week. Three credits. Mr. McNatt. 8 M. T. W. T. F. Pe. 206.

This is the first term of the regular college course in General Economics.

An introduction to the general field of economics. A study of economic institutions and the general principles governing the production and distribution of wealth under the existing economic organization.

Econ. s103b. General Economics. Five hours a week. Three credits. Mr. McNatt. 9 M. T. W. T. F. Pe. 206.

This is the second term of the regular college course in General Economics.

Econ. s103c. General Economics. Five hours a week. Three credits. Mr. McNatt. 11 M. T. W. T. F. Pe. 206.

This is the third term of the regular college course in General Economics.

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†Offered in 1937, not offered 1938.

Econ. s112. Accounting for Engineers. Five hours a week. Three credits. Mr. Shulenberger. 9 M. T. W. T. F. Pe. 108.

Required of students in the School of Engineering. Not open to students in Business Administration.

A survey of accounting and financial statements and records; their construction, their use and interpretation.

Econ. s210. Business Organization. Five hours a week. Three credits. Prerequisite: Econ. 102 or 103. Mr. Shulenberger. 8 M. T. W. T. F. Pe. 109.

Forms of business enterprise, single enterprise, partnership, joint-stock company, corporation, and principles of business management.

Econ. s211. Business Law. Five hours a week. Three credits. Prerequisite: Econ. 102 or 103. Mr. Shulenberger. 10 M. T. W. T. F. Pe. 109.

Required of seniors in Business Administration and in Ceramic, Chemical, Civil, Architectural, Electrical, and Mechanical Engineering. Elective for other students.

A general survey of the sources of law, fields of law, contracts, agency, sales, law of partnerships and corporation, negotiable instruments, bailments and carriers, personal property, suretyship and guaranty, bankruptcy, crimes in business.

Econ. s217. Advertising. Five hours a week. Three credits. Mr. Moen. 7 M. T. W. T. F. Pe. 109.

Principles and practices of advertising and its relation to the distribution and sales program.

Econ. s330. Principles of Insurance. Five hours a week. Three credits. Prerequisite: Econ. 103 or equivalent. Mr. Shulenberger. 11 M. T. W. T. F. Pe. 108.

Risk as an element of all agricultural and industrial activity. Such risks as can be covered by insurance are discussed, with the appropriate form of insurance, e. g., employer's liability, workmen's compensation, fire, life, and other forms.

Econ. s314. Forcasting Business Conditions (Business Statistics). Five hours a week. Three credits. Prerequisite: Econ. 102 or 103. Mr. Leager. 12 M. T. W. T. F. Pe. 108.

Price levels, the business cycle, business barometers, business forcasting.

Econ. s326. Public Finance—Social Security. Five hours a week. Three credits. Prerequisite: Econ. 103. Mr. Moen. 9 M. T. W. T. F. Pe. 109.

Social Security, classes of income and expenditure, taxation.

EDUCATION

Courses for Undergraduates

Ed. s203a. Educational Psychology. Five hours a week. Three credits. Required of students in Education; elective for others. Mr. Garrison. 8 M. T. W. T. F. H. 3.

Original nature and enviroment are analyzed in this course as to their function in the educational processes. The elementary principles of

psychology are illustrated and studied as they relate to the learning process.

Ed. s203b. Educational Psychology. Five hours a week. Three credits. Required of students in Education; elective for others. Mr. Garrison. 10 M. T. W. T. F. H. 5.

This part of educational psychology is concerned with the physical and mental development of high school boys and girls. Social development; character development; emotional development and control; religious and moral development; and mental hygiene are topics given special consideration.

Ed. s307. Methods of Teaching Agriculture. Three credits. Messrs. Cook and Armstrong. 8 M. T. W. T. F. Required of students in Agricultural Education. Prerequisites: Ed. 203, 208, or equivalents, and at least twelve credits in Agriculture.

Organization of subject matter; teaching techniques; supervised practice; textbooks and reference material; Future Farmers of America; room arrangement and equipment.

VOCATIONAL GUIDANCE.—Guidance is recognized as a part of the work of each teacher in the school. Pupils of all ages require assistance in the growth and progress through their school problems. Each stage of school development as elementary, junior high, senior high, and college, requires special attention which the individual teacher may render. In addition to the work done in the classroom, there is that of the school counselor and director of the work whose duty it is to provide materials and programs of work, together with the care of such special cases as require specific aid.

Vocational Guidance, Ed. s320, is a beginning course for advanced undergraduates and graduates, also for teachers in service who wish to help in guidance activities. Occupational Counseling, Ed. s412, is a graduate course for those who have had Ed. s320 and some experience in teaching, and those who have had a wider experience in school and industry. Closely correlated with these courses are those in psychology, sociology, economics, and testing.

Ed. s320. Vocational Guidance. Five hours a week. Three credits. Mr. Boshart. Prerequisite: Twelve credits in Education. 8 M. T. W. T. F. H. 16.

The course in Vocational Guidance is intended to give emphasis to the place of guidance in the school program. It will treat of the development of educational and vocational guidance, its relation to personnel work, principles and practices of guidance and employment, child legislation, and forms and records for school use.

Ed. s321. Vocational Education. Five hours a week. Three credits. Mr. Boshart. Prerequisite: Twelve credits in Education. 11 M. T. W. T. F. H. 16.

This course, dealing with the problems of vocational education, is intended to give acquaintance with its underlying philosophy, its place in our education, the laws governing it, and the prevailing practices and administration. It is of particular interest to administrators and teachers who have or expect to have to do with the direction of educational work in agriculture, homemaking, industry, and commerce. It deals with all-day, evening, part-time, and general continuation class work.

*Ed. s330. **Visual Instruction.** Five hours a week. Three credits. Prerequisite: Twelve credits in Education. Mr. Armstrong. 11 M. T. W. T. F. Pe. 201.

An advanced course in the psychology, methods, and technique of visual instruction; its place and limits, evaluation and expense of various aids, aids available. Practice in the making and use of practical visual aids.

*Ed. s331. **Visual Aids in Social Sciences.** Five hours a week. Three credits. Prerequisite: Twelve credits in Education. Mr. Armstrong. 8 M. T. W. T. F. Pe. 201.

A detailed study of visual materials, devices, and procedures applicable to teaching the social sciences, including geography. Emphasis will be given to motivation, facilitating the learning process, and fixation. Various devices will be used by the class.

INDUSTRIAL ARTS.—The summer session will emphasize the preparation of teachers, supervisors, and principals for teaching and directing industrial arts in the various communities of North Carolina. The rapid growth of industrial education in our State is creating a demand for a competent personnel for making this work a definite functioning element in education rather than a type of "busy work," as is so often likely to be the case. Courses will be offered in subject matter, methods of teaching, administration, shop practice, and drawing.

Industrial arts depends largely upon the soundness of the philosophy underlying its introduction into the field of education. For this reason professionally minded teachers and administrators will welcome courses giving them a better basis for their classroom activity.

Principals, supervisors, and teachers are needed to introduce and develop the various phases of industrial education in our junior and senior high schools, part-time and continuation schools, and evening schools. The demand is for those who are familiar with both general and vocational education and at the same time capable of placing the proper emphasis upon the more practical phases of education. Supporting courses are offered in the Engineering and Textile Schools.

The underlying purpose of the courses offered in this field is to acquaint those who are responsible for developing the possibilities of industrial arts and other shop activity in our school system with prevalent practices and to give helpful aids in program construction. The possibilities of creating interest and motivating school subjects are often lost sight of because of the lack of knowing how to utilize the everyday things about us.

For those who are interested in administrating and teaching industrial arts, the following courses will be offered: The Theory of Industrial Arts, Practical Arts Problems, the Development of Vocational Education, and Problems of the General Shop versus Problems of the Unit Shop, all of which are correlated with courses in mechanical drawing, woodwork, metal work, electrical work, textiles, and auto-mechanics. These courses will be taught by instructors of wide experience helpful to teachers of general shop and unit courses.

We have teachers of academic subjects who have had fine experience in working with tools. These teachers, with the aid of summer session classes in the Department of Industrial Arts, could readily prepare themselves to meet the requirements for teaching shop and drawing classes.

Credit for these courses may be used for college credit, raising certificates, or renewing certificates. Teachers desiring to raise or renew their certificates will take the first two courses in the list following, and one course selected from the remainder of the list.

Ed. s353. The Theory of Industrial Arts. Five hours a week. Three credits.

†Ed. s354. Practical Arts Problems. Ten hours a week. Three credits.

Tex. s115. Textiles for Teachers. Four hours a week. Two credits.

Ed. s203b. Educational Psychology. Five hours a week. Three credits.

Ed. s320. Vocational Guidance. Five hours a week. Three credits.

Ed. s321. Vocational Education. Five hours a week. Three credits.

***Ed. s381. Guidance and Discipline of Students.** Five hours a week. Three credits.

Note: The above courses are described elsewhere in this bulletin. Attention is also called to the courses listed under Engineering which are especially designed for teachers of Industrial Arts and Trades and Industries.

Ed. s352. Theory of Industrial Arts. Five hours a week. Three credits. Prerequisite: Twelve credits in Education. Miss Bell. 11 M. T. W. T. F. H. 15.

A study of the value and place of Industrial Arts in the public school. A study of the industries will be made with the idea of making suitable selection of projects to correlate with other school subjects and to aid in the development of methods and directions for activity work in the early grades. Intended for teachers, supervisors, and principals. Emphasis will be placed upon the use of the Industrial Arts to motivate and sustain effort in the learning process.

Ed. s354. Practical Arts Problems. Five or ten hours a week. One and one-half credits or three credits. Prerequisite: Twelve credits in Education or the consent of the instructor. Miss Bell. 9-11 M. T. W. T. F. H. 15.

Intended for the classroom teacher and supervisor for acquaintance with materials and how to use them. Instruction will be given in the making of posters, block printing, stenciling, work with plastics as clay and plasterine, making of baskets from reeds, raffia, and other materials, paper and cardboard instruction, and in the use of such other materials as are suited to the work in hand. It will be of aid to administrators in the development of the activity program.

Ed. s357. The Problems of the General and Unit Shops. Five hours a week. Three credits. Mr. Boshart. 9 M. T. W. T. F.

Intended for those who are teaching or expect to teach shop work and drawing. Its purpose is to acquaint students with the possibilities of the general shop as compared with those of the unit shop and to aid in setting up procedures for each type of shop under conditions where they can best function. Those taking this course should take parallel courses in shop instruction, unless they have had considerable experience. Problems of organization, equipment, instruction sheets and their uses, and courses of study will be considered.

Ed. s360. Special Problems in Teaching Agriculture. Five hours a week. Three credits. Prerequisite: Twelve credits in Education, including

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†A fee of $1.00 will be charged those taking Ed. s354 to pay for the materials used.

Methods of Teaching Agriculture. Messrs. Cook and Armstrong. 10 M. T. W. T. F. Pe. 201.

This course will consider special problems in agricultural teaching and the preparation of teaching plans, involving the use of survey information. Each student will prepare a program of work for a specified community.

*Educ. s371. **Psychology of the Exceptional Pupil.** Five hours a week. Three credits. Prerequisite: Twelve credits in education, six of which must be in Psychology. Mr. Garrison. 11 M. T. W. T. F. H. 3.

A study of the psychological characteristics and educational treatment of the gifted and subnormal pupil. The child with specific sensory defects will also receive consideration.

†Educ. s381. **Guidance and Discipline of Students.** Five hours a week. Three credits. Prerequisite: Twelve credits in Education. Mr. Cook. 9 M. T. W. Th. F.

Factors influencing character development; responsibilities and opportunities of teachers and administrators for the moral and civic conduct of their students; recent trends; difficulties; materials and procedures.

Ed. s412. **Occupational Counseling.** Five hours a week. Three credits. Mr. Boshart. Prerequisite: Ed. 320, 332 or equivalent. 12 M. T. W. T. F. H. 16.

This course is intended for teachers of experience and those interested in the problems of guidance in school and life. Attention is given to group and individual counseling as it may be applied to the junior and senior high schools, colleges, or placement offices, and to the procedures of conducting interviews and conferences. Information concerning occupational material will be organized, evaluated, and applied to type cases. The relation to personnel work will be considered as the functions of school and industry are studied.

Ed. s416. **Problems in Agricultural Teaching.** Five hours a week. Three credits. Prerequisite: Ed. 203, 307, and at least twelve other credits in Education and Agriculture. Experience in agricultural teaching will be accepted in lieu of Ed. 307. Mr. Cook. By arrangement. Pe. 201.

Investigations, reports, and a critical evaluation of present practices with constructive remedies. The content of the course will depend on the interests and needs of the individual members of the class.

Ed. s420. **Agricultural Education Seminar.** One credit. Mr. Cook, Mr. Armstrong. By arrangement. Prerequisite: Eighteen credits in Education.

A critical review of current articles and books of interest to students of agricultural education.

Ed. s421. **Research in Special Fields of Education.** Staff.

ENGINEERING

A. E. s107. **Pencil Sketching.** Five hours per week. Three credits. Mr. Paulson. 9 M. T. W. Th. F. A. E. 307.

Quick sketching of objects as seen and imagined in perspective. Elementary principles of perspective, especially as an aid to visualization.

†Not offered 1937.

A. E. s113. Fine Arts for Teachers. Eight hours per week. Three credits. Mr. Paulson. 11 M. T. W. Th. F., 12 M. W. F. P. & E. 307.

Black and white, and color drawing adapted to grade school use. Lettering, illustrating, poster making, etc.

A. E. s214. Art Appreciation for Teachers. Five hours a per week. Three credits. Mr. Paulson. 8 M. T. W. Th. F. P. & E. 307.

Picture study of the list suggested by the State Board of Education for grade school use, including paintings, architecture, and sculpture.

C. E. s102. Surveying I. Three credits. Staff. Two sections: one section will run for three weeks, six days a week; the second section will run for six weeks, afternoons only. C. E. Building and field.

The use, care, and adjustment of surveying instruments; elementary land surveying, traverse lines, leveling, stadia measurements, topographical surveying, plane table surveying; office work in connection with field surveying. Laboratory fee $2.00.

C. E. s240. Advanced Surveying. Three credits. Staff. Required in the summer immediately following the sophomore year in Civil Engineering. Prerequisite: C. E. 206 and 207.

Plane table practice, special problems in surveying practice; triangulation, railroad and highway spirals; hydrographic surveying with sextant; plane table problems; the use and rating of current meters; measurement of stream flow; drainage problems. Laying out proposed construction work. Topography, details, special problems. Laboratory fee $2.00.

C. E. s200—A, B or C. Mechanics. Six hours a week. Three credits. Mr. Smith. Required of all students in engineering. C. E. 222.

Mechanics A: Statics, con-current, non-current and parallel forces systems; friction.

Mechanics B: Kinematics, centroids and moment of inertia.

Mechanics C: Kinetics, work, power, energy, impulse and momentum.

C. E. s203. Strength of Materials. Six hours a week. Three credits. Mr. Smith. Required of all students in engineering. C. E. 222.

Stresses in beams, columns and shafts. Shear, flexure, and deflection of columns. Beams with two or more supports.

E. E. s101. Electrical Engineering Fundamentals. Twelve hours a week. Six credits. Mr. Fouraker. P. & E. 205.

This course covers the second and the third terms of the introductory course in Electrical Engineering. Electrical engineering problems, fundamental laws of electric, magnetic, and dielectric circuits.

M. E. s102. Engineering Drawing. Twelve or twenty-four hours a week. Three or six credits. Required of Engineering freshmen. Mr. Briggs. 8-10 or 8-12 M. T. W. T. F. S. P. 106.

Drawing-board work, covering lettering, orthographic projection, auxiliary projection, isometric projection, cabinet projection, intersection and development, working drawings, and blue printing.

M. E. s103. Descriptive Geometry. Twelve hours a week. Three credits. Mr. Briggs. 8-10 or 10-12 M. T. W. T. F. S. P. 106.

This work covers the representation of geometrical magnitudes by means of points, lines, planes, and solids, and the solution of problems relating to them.

M. E. s105. Woodworking. Eight or twelve hours a week. Two or three credits. Required of sophomores in Engineering. Mr. Wheeler.

Deals with elementary joinery, finishing, theory of dry-kilning, wood turning. Lectures, demonstrations, and practice in hand work and machine methods. Typical patterns and core boxes are constructed, such as solid, split, and loose-piece patterns; mounting of patterns on boards and their preparation for use in the foundry.

M. E. s110. Mechanical Drawing. Eight or sixteen hours a week. Two or four credits. Mr. Briggs. P. 106.

Drawing-board work, covering machine fastenings, pipe fittings, elementary cams, technical sketching, working drawings, tracing, and blueprinting.

M. E. s219. Machine Shop II. Four, eight, or twelve hours a week. One, two, or three credits. Mr. Wheeler.

Includes laying out work, grinding tools, chipping, drilling, tapping, babbitting bearings and scrapping. Machine work, including centering, straight and taper turning, chicking, screw cutting, shaper work, planer work and index milling, and gear cutting.

SHOP AND DRAWING COURSES FOR INDUSTRIAL EDUCATION TEACHERS

M. E. s210. Mechanical Drawing for Teachers. Ten hours a week. Three credits. Mr. Briggs. 8-10 or 10-12 M. T. W. Th. F. P. 106.

Intended for those teaching or preparing to teach mechanical drawing and shop practice. Consists of lectures and drawing-room practices involving problems for the junior and senior high school mechanical drawing. The elements of lettering, instrument practice, projections, intersections, developments, tracing, blue-printing, and methods of instruction will be considered. (For advanced work in drawing see Architectural and Mechanical Engineering.)

M. E. s240. Auto Mechanics. Ten hours a week. Three credits. Mr. Bridges. 2-4 M. T. W. Th. F. Shops.

Intended for teachers and prospective teachers of auto mechanics where they may obtain acquaintance and experience in dealing with instruction units for junior and senior high schools. Consideration will be given to the organization of teaching material, shop layout, shop management, selection of tool equipment, and tool-room operation.

M. E. s250. Woodworking for Teachers. Ten hours a week. Three credits. Mr. Rowland. 2-4 M. T. W. Th. F. Shops.

Stresses practical methods for teaching woodwork in general and in unit shops on the Industrial Arts basis. Problems considered are to be used chiefly for grades seven, eight, and nine, or older pupils when beginning. Deals primarily with hand tools, common woods, and elementary finishes.

M. E. s350. Woodworking for Teachers (Advanced). Ten hours a week. Three credits. Prerequisite or its equivalent and consent of the instructor. Mr. Rowland. By arrangement. Shops.

Emphasis is placed on educationally significant projects adapted to older students where the use and care of both hand and machine tools is an important factor. Opportunity for practice in grinding edged tools, filing and setting of saws, the maintenance of other tools, and the organization and management of tool rooms and supplies.

ENGLISH

Eng. s101. Composition. Five hours a week. Three credits. Mr. Hartley. 8 M. T. W. T. F. Pu. 103.

Illustrative readings and exercises in types of composition; long paper; collateral reading.

Eng. s202. Advanced English Grammar. Five hours a week. Three credits. Mr. Ladu. 11 M. T. W. T. F. Pu. 105.

For teachers of English in high schools and in the grades, and for journalists and other creative writers. The science of grammar and the art of its application.

Eng. s221. Survey of American Literature. Five hours a week. Three credits. Prerequisite: Eng. 101. Mr. Ladu. 8 M. T. W. T. F. Pu. 105.

Equivalent to the second term in the regular session; from 1840 to 1900.

A study of the masterpieces and outstanding types of American literature in their historical settings, together with a critical examination of the development of American literary thought in connection with its European background.

***Eng. s320. The Short Story.** Five hours a week. Three credits. Prerequisite: Eng. 101 and three additional credits in English. Mr. Hartley. 11 M. T. W. T. F.

Development, structure, types, and style of the present-day short story; papers, collateral reading.

***Eng. s332. The Romantic Period.** Five hours a week. Three credits. Prerequisite: Eng. 101 and three additional credits in English. Mr. Hartley. 9 M. T. W. T. F. Pu. 103.

Representative poems of Gray, Blake, Burns, Wordsworth, Coleridge, Scott, Byron, Shelley, and Keats.

***Eng. s337. Contemporary American Literature.** Five hours a week. Three credits. Prerequisite: Eng. 101 and three additional credits in English. Mr. Ladu. 10 M. T. W. T. F. Pu. 105.

Study of leading writers of the present century, and an attempt to interpret their works against the social background of the period.

FIELD CROPS

F. C. s1. Cotton Classing. Twenty hours a week for six weeks. No college credit. Mr. Darst, Mr. Cotner. 9-1 M. T. W. T. F. Pt. 45.

The Summer School of Cotton Classing offers an intensive course in the grading and stapling of cotton.

The course will consist of lectures and daily practice in grading and stapling cotton samples according to the "Universal Cotton Standards."

The course will be given each day, with the exception of Saturday, for four hours a day.

The first period of each day will be devoted to lectures and discussions, and the remaining time will be used in the actual practice of grading and stapling cotton.

All the instruction in classing will be done by men holding a Federal Cotton Classing license.

The Cotton Classing course is designed for a special group, and does not carry collegiate credit. There is a flat charge of $27.50 for the whole course in Cotton Classing. Persons registered for 50 per cent or less of the course will be charged $15.00. All fees are to be paid on or before registration.

A Cotton Classing certificate will be issued by the College to those satisfactorily completing the six weeks course.

The school has been serving the State and neighboring states for fourteen years. The school has international recognition, as men from the following countries have taken the course: South America, India, China, South Africa, Belgium, and Germany.

Persons expecting to attend this course should notify Dr. J. B. Cotner, State College Station, Raleigh, N. C.

F. C. s210. Cotton Production, or s215. Tobacco Production. Five hours a week. Three credits. Mr. Cotner. 8 M. T. W. T. F. Pt. 45.

Lectures and recitations on history, production, adaptation, types and varieties, including cultivation, harvesting, grading, and marketing, will be given. Laboratory consists of variety studies, the classing of cotton, and the grading of tobacco.

F. C. s225. Cotton Classing II. Three or six credits. Mr. Cotner. 9-11 or 11-1.

Required of sophomores in Textile Manufacturing, Chemistry and Dyeing, and Designing.

A study of the universal standards of American upland cotton for grade and staple. Factors that determine grade and their relative value. Practice will consist of classing and stapling three to five thousand samples of cotton.

F. C. s325. Seed Certification Problems. Five hours a week. Three credits. Mr. Darst. Prerequisite: F. C. 101. Arranged. Pt. 26.

A study of standards for quality in field crops for certification.

F. C. s351. Crop Research. Undergraduate credits, 3-9; Graduate credits, 2-6. Elective for graduates and advanced undergraduates. Mr. Darst, Mr. Cotner. By arrangement. Pt. 26.

F. C. s415. Plant Breeding Research. Three credits. Prerequisite: F. C. 345. By arrangement. Mr. Cotner.

Inheritance problems of the plants. Available during any season appropriate to the study of the particular crop.

GEOLOGY AND PHYSICAL GEOGRAPHY

Geol. s101. Earth History. Five hours a week. Three credits. Mr. Stuckey. 9 M. T. W. T. F. Pr.

Open to both college students and teachers who are interested in a better understanding of the world about them.

An introductory course in general geology dealing with the changes which have taken place in the earth and the physical and life processes which have brought about these changes. The first half of the course deals with the processes of physical and dynamical forces, while the second half deals with the historical development of the earth as it has been affected by those forces and by life processes.

Geol. s120. Physical Geology. Three lectures; four hours laboratory and field work. Three credits. Mr. Stuckey. 8 M. W. F. Laboratory by arrangement. Pr.

Physical Geology as related to forces acting on and in the earth, and materials in the earth's crust.

Geol. s291. Geology of North Carolina. Three lectures; four hours laboratory. Three credits. Mr. Stucky. 12 M. W. F. Laboratory by arrangement. Pr.

Elective for students in the Schools of Engineering and Science and Business who have had Geol. 101 or 120.

Also open to teachers who are interested in the geology of North Carolina and who may be interested in helping students to collect and assemble groups of the common rocks and minerals from different sections of the State.

The course will cover the physical geography, general geology, common rocks and minerals, and mine and quarry products of the State.

HISTORY

Hist. s101a. Economic History. Five hours a week. Three credits. Mr. Bauerlein. 8 M. T. W. T. F. Pe. 1.

A survey course dealing with the European background of American history; English colonization and government; and colonial agriculture, industry, finance, commerce, and social life. The economic background of the Revolution and the problems confronting the states during and after the War for Independence will also be considered.

Hist. s101b. Economic History. Five hours a week. Three credits. Mr. Bauerlein. 9 M. T. W. T. F. Pe. 1.

The economic aspects of the beginnings of the government under the Constitution; a consideration of the economic growth of the United States, 1790 to 1860 in the fields of commerce, industry, agriculture and finance with some attention to parallel developments in Europe and the effects of the Industrial Revolution; the struggle between the North and South, 1861-1865 in the light of its economic significance.

Hist. s200. American National Government. Five hours a week. Three credits. Mr. Seegers. 10 M. T. W. T. F. Pe. 4.

This course gives a survey of the historical development, the Constitution, the organization, powers, and the actual operations of our national government. Special emphasis is given to present-day conditions and movements in our government and political life.

Hist. s204a. European History. Five hours a week. Three credits. Mr. Seegers. 9 M. T. W. T. F. Pe. 4.

A survey of European history from the dawn of the modern era to the French Revolution. The renaissance, reformation, and rise of national states; imperial rivalries of the early modern period; the commercial, agricultural, and intellectural revolutions; the development of democratic institutions in the seventeenth and eighteenth centuries.

***Hist. s301a. The Colonial Period of American History.** Five hours a week. Three credits. Prerequisite: History 101. Mr. Bauerlein. 11 M. T. W. T. F. Pe. 1.

The European background of colonial America; the English settlements; expansion of the English colonies with respect to economic growth, con-

stitutional development and social conditions; relations with colonial neighbors and the English government; and a consideration of the American Revolution.

HORTICULTURE

Hort. s102. Plant Propagation and Nursery Practice. Three credits. Mr. Randall. By arrangement.

Study of methods and practice in seedage, cuttage, separation and division, budding and grafting. Cultural principles and practices in growing nursery stock.

Hort. s228. Home Floriculture. Three credits. Mr. Randall. By arrangement. Pk. 308.

Principles and methods of growing garden flowers and house plants, including varieties and their adaptability.

There will be the equivalent of two lectures and one two-hour laboratory for each of the above courses.

MATHEMATICS

Math. s100a. Mathematical Analysis. Five hours a week. Three credits. Prerequisite: Algebra to quadratics and Plane Geometry. Mr. Cell. 11 M. T. W. T. F. Page 209.

Review of elementary topics such as factoring, fractions, simple equations, exponents and radicals. Topics then taken up are: quadratic equations, solution of higher degree equations, simultaneous quadratic equations, logarithms, the binomial theorem, and the elementary theory of probability.

Math. s100b. Mathematical Analysis. Five hours a week. Three credits. Mr. Cell. 12 M. T. W. T. F. Page 209.

The study of trigonometric functions with their applications to the solution of the right and oblique triangles, with numerous problems. Also, a brief study of trigonometric equations and identities, and inverse functions.

Math. s100c. Mathematical Analysis. Five hours a week. Three credits. Mr. Williams. 9 M. T. W. T. F. Page 101B.

Simple and compound interest, annuities, sinking funds, and amortization and valuation of bonds, and other applications.

Math. s101. Algebra. Twelve hours a week. Six credits. Mr. Mumford. 11-1 M. T. W. T. F. S. Page 203.

Progressions, binomial theorem, undetermined coefficients, logarithms, compound interest and annuities, permutations and computations, the general theory of equations, and the solution of higher equations.

Math. s102. Trigonometry. Twelve hours a week. Six credits. Mr. Bullock. 8-10 M. T. W. T. F. S. Page 203.

Definitions of trigonometric functions, derivations of formulae, solution of plane and spherical triangles, and the solution of many practical problems.

Math. s103. Analytical Geometry. Twelve hours. Six credits. Prerequisite: Mathematics 101 and 102. Mr. Bullock. 11-1 M. T. W. T. F. Page 101A.

Loci of equations, the straight line, circle, parabola, ellipse, hyperbola, and the general equation of the second degree.

Math. s201. Differential Calculus. Eight hours a week. Four credits. Prerequisite: Mathematics 103. Mr. Williams. 11-1 M. T. W. T. F. Page 101B.

An elementary course on the fundamental principles of the calculus, including the development of the formulae for differentiation with their application to the problems in rates, maxima and minima, etc.

Math. s202. Integral Calculus I. Eight hours a week. Four credits. Prerequisite: Mathematics 201. Mr. Williams. 11-1 M. T. W. T. F. Page 101B.

Methods of integration, the study of the definite integral, with applications to problems in areas, volumes, surfaces, and lengths of arcs.

Math. s203. Integral Calculus II. Eight hours a week. Four credits. Prerequisite: Mathematics 202. Mr. Cell. 8-10 M. T. W. T. F. Page 209.

Centroids, radii of gyration and moments of inertia, problems in work and liquid pressure, double and triple integrals, infinite series, hyperbolic functions, and differential equations.

MODERN LANGUAGES

German

M. L. s108. Elementary German Prose. Five hours a week. Three credits. Mr. Ballenger. 11 M. T. W. T. F. Pe. 211-212.

This course consists of reading and translation of very simple German, along with lectures on the structure of the German language and work composition. The work is conducted in such a manner that the student's choice in reading material is a matter of individual need. Daily reports and conferences are required.

M. L. s204. Intermediate Scientific German. Five or ten hours a week. Three or six credits. Mr. Hinkle. 10 M. T. W. T. F. Pe. 211-212.

This course consists of a study of relatively simple scientific German literature. It is conducted by means of lectures and reports in such manner that the student's choice of reading material is a matter of individual need. Daily reports and conferences are required. Should be taken in conjunction with M. L. s108.

French

M. L. s107. Elementary French Prose. Five hours a week. Three credits. Mr. Ballenger. 8 M. T. W. T. F. Pe. 211-212.

This course consists of reading and translation of easy French, along with lectures on the structure of the French language, diction, and pronunciation. The work is conducted in such manner that the student's choice in reading material is a matter of individual need. Daily reports and conferences are required.

M. L. s212. Intermediate Scientific French. Five or ten hours a week. Three or six credits. Mr. Hinkle. 9 M. T. W. T. F. Pe. 211-212.

This course consists of a study of simple scientific French literature.

It is conducted by means of lectures and reports in such manner that the student's choice of reading material is a matter of individual need. Daily reports and conferences are required. Should be taken in conjunction with M. L. s107.

M. L. s310. French, German and Spanish Civilization. Five hours a week. Three credits. Mr. Hinkle. 11 M. T. W. T. F. Pe. 211-212.

This is a reading course dealing with the development of French, German and Spanish civilizations. The reading material is supplemented by lectures and reports on the manners and customs of the respective culture under consideration. The civilization studied during the Summer Session is optional with the enrollment of the class.

Spanish

M. L. s111. Elementary Spanish Prose. Five hours a week. Three credits. Mr. Hinkle or Mr. Ballenger. 12 M. T. W. T. F. Pe. 211-212.

This course consists of reading and translation of easy Spanish, along with lectures on the structure of the Spanish language, diction, and pronunciation. The work is conducted in such manner that the student's choice in reading material is a matter of individual need. Daily reports and conferences are required.

PHYSICAL EDUCATION

P. E. s101. Fundamental Activities. Four hours practice. One credit. Mr. Miller. By arrangement. Gym.

Freshman requirement. Individual health and physical efficiency of each student, based on standard athletic, gymnastic, and efficiency tests.

P. E. s102. Sports Activities. Four hours practice. One credit. Mr. Miller. By arrangement. Gym.

Sophomore requirement. Election permitted in the popular sports for healthful exercise and a fair degree of skill in them.

P. E. s114. Football—Theory and Practice. Five hours a week, three hours practice. Three credits. Mr. Miller. By arrangement. Gym.

This course will cover the organization of the theory and practice of football coaching.

P. E. s115. Basketball—Theory and Practice. Five hours theory, three hours practice. Three credits. Mr. Miller. By arrangement. Gym.

This course will cover the organization of the theory and practice of basketball coaching.

P. E. s118. History and Principles of Physical Education. Four hours a week. 2 Credits. Mr. Miller. By arrangement. Gymnasium.

An historical survey of physical education, the conditions that influence physical activities among people. The relationship of Physical Education to growth and development and to general education.

PHYSICS

Physics s103. Physics for Textile Students. Four or eight credits. Five hours class work, two two-hour laboratory periods each week for four credits. Double this for eight credits. Mr. Lancaster. 9 M.

T. W. T. F.; 2-4 M. W.; 9-11 M. T. W. T. F.; 2-4 M. T. W. T. P & E 209. Prerequisite: Math 100.

Industrial Physics, with emphasis on practical applications to the textile industry.

Physics s104. Physics for Engineers. Four or eight credits. Mr. Meares. 8 M. T. W. T. F.; 2-4 M. W.; 8-10 M. T. W. T. F.; 2-4 M. W. P. & E. 212.

An advanced treatment of General Physics Second- or third-term work may be taken or the two terms taken simultaneously.

Physics s107. Descriptive Astronomy. Five hours a week. Three credits. Mr. Heck. 12 M. T. W. T. F. P. & E. 212.

A descriptive course covering the most interesting elements in the study of the sun and planets and the stars. The modern interpretation of the universe as a whole given in this course makes it valuable as a background to a student or teacher of any subject. Observation periods, using the telescope on top of the physics building, will be substituted at times for class lectures.

Physics s205. Light in Industry. Three hours credit. Mr. Lancaster. 11 M. T. W. T. F. P. & E. 209.

Fundamentals of light, illumination, and color, with the principles applied to the selection, mixing, harmony, matching, lighting, photography, and pigments.

***Physics s212. Photography.** Four hours class work and two laboratory periods each week. Three credits. Mr. Meares. 7 M. T. W. T. Laboratory by arrangement.

A general course in photography covering cameras and lenses, principles of exposure, development and printing; lantern slides, projection printing, and color photography.

Physics s411. Research.

Graduate courses in physics will be given if there is sufficient demand.

POULTRY SCIENCE

Poul. s305. Poultry Diseases. Three credits. Mr. Gauger or Mr. Dearstyne. By arrangement. R. 208.

Common diseases of poultry as found in North Carolina; seasonal anticipation of diseases; autopsy methods and practice; poultry sanitation.

Poul. s310. Advanced Poultry Production. Three credits. Mr. Dearstyne or Mr. Williams. By arrangement.

Course especially adaptable to vocational teachers in agriculture. Includes poultry judging, nutrition, and commercial plant management.

Poul. s407. Poultry Research. Three credits. Staff. By arrangement. R. 208.

Problems in poultry nutrition, diseases, marketing, and breeding may be undertaken. Such problems shall be conducted on a definitely outlined basis acceptable to the department and the results shall be summarized in the form of an acceptable basis.

PSYCHOLOGY

Psychol. s101. Introduction to Psychology. Five hours a week. Three credits. Mr. Garrison. 9 M. T. W. T. F. H. 5.

A study of the structure, function, and laws of human behavior, with applications of psychology to everyday life.

Psychol. s203a. Educational Psychology. Five hours a week. Three credits. Required of students in Education; elective for others. Mr. Garrison. 8 M. T. W. T. F. H. 3.

(For a description of course, see Ed. 203a.)

Psychol. s203b. Educational Psychology. Five hours a week. Three credits. Required of students in Education; elective for others. Mr. Garrison. 10 M. T. W. T. F. H. 5.

(For a description of course, see Ed. 203b.)

***Psychol. s371. Psychology of the Exceptional Pupil.** Five hours a week. Three credits. Prerequisite: Twelve credits in education, six of which must be in Psychology. Mr. Garrison. 11 M. T. W. T. F. H. 3.

(For a description of course, see Ed. s371.)

RELIGION

Rel. s103. Social Ethics. Five hours a week. Three credits. Mr. Hicks. 10 M. T. W. T. F. Pe. 204.

Historical and psychological study of moral nature and moral progress; origin and development of the social conscience; and changing ethics in certain aspects of social life.

Rel. s201. Comparative Religion. Five hours a week. Three credits. Mr. Hicks. 12 M. T. W. T. F. Pe. 204.

History, general characteristics, and social significance of the great ethnic religions of the world, characteristics of the living religions.

SOCIOLOGY

Soc. s102. Introductory Sociology. Five hours a week. Three credits. Mr. Hicks. 11 M. T. W. T. F. Pe. 204.

This course offers an inductive introduction to the field of sociology by taking up a number of social problems which confront every community. The outstanding problems to be considered are: poverty, crime, divorce, immigration, population, and race problems. This course, therefore, is a natural introduction to the sociology courses which deal more directly with social theory.

Soc. s103. General Sociology. (1st term.) Five hours a week. Three credits. Mr. Winston. 9 M. T. W. T. F. Pe. 207.

The course deals with the basic principles of sociology, then analyzes society and its influence on human behavior. In the summer session, it is particularly orientated for those who are preparing to, or who are teaching in the field of the social sciences.

***Soc. s301. Social Pathology.** Five hours a week. Three credits. Prerequisite: Soc. 103. Mr. Winston. 10 M. T. W. T. F. Pe. 207.

The course gives primary attention to the problems of adjustment resulting from the complexities of modern life. In the Summer Session, it

is particularly adapted to the behavior problems of children which teachers face in their work.

Soc. s306. The American Family. Five hours a week. Three credits. Prerequisite: Soc. 103 and three additional term credits in Sociology. Mr. Winston. 8 M. T. W. T. F. Pe. 207.

A study of family relationships, of the relationship between husband and wife, parents and children, with particular emphasis on the development of personality. The effect of present-day social changes upon the family, and the changes in family life as a result will be studied. Discussion of various efforts to stabilize the family. The part habits play in successful and non-successful marriages will also be discussed.

SOILS

Soils s115. Soils. Five recitations and lectures, four hours laboratory. Four credits. Mr. Clevenger. Prerequisite: Geol. 120 and Chem. 101, 3, 5. 9 M. T. W. T. F. Laboratory arranged.

A study of the properties of soils and their relation to soil management.

Soils s265. Soil Fertility. Four hours of class, one laboratory period a week. Three credits. Mr. Clevenger. 11 M. T. W. T. Laboratory to be arranged.

A course dealing with the chemical and biological properties of soils as related to soil fertility.

Soils s310. Fertilizers. Four hours of class and one laboratory period a week. Three credits. Mr. Clevenger. 10 M. T. W. T. Laboratory to be arranged. Pt. 16.

A study of the sources, characteristics, and utilization of fertilizers.

Soils s430. Soil Research. Two to five credits. Mr. Clevenger and Mr. Lutz. By arrangement.

TEXTILES

The Textile School at State College occupies a place of merited leadership in this country. A state with North Carolina's rank in the textile field needs to take advantage of the latest developments in research and training in this, North Carolina's largest industry. The Textile School offers its equipment and faculty to the people of the State during the Summer School.

Courses in textiles designed for men who are employed in the manufacturing plants, as well as courses for teachers who are employed in the textile communities, will be given. These courses will be arranged on a unit basis in order to meet the needs of the various groups who may wish to come to the College for different periods.

If there is sufficient demand, a second summer session of textile courses will be offered from July 26 to September 3. Students interested in attending this special session should communicate with Dean Thomas Nelson of the Textile School as early as possible, but not later than July 10. The courses given will depend upon the requests received.

Tex. s102. Yarn Manufacture I. Three credits. Mr. Hilton. By arrangement. Textile Building.

Mixing of cotton, description and setting of openers, pickers, and cards. Production, speed, and draft calculations.

Tex. s103. Yarn Manufacture Laboratory I. One or two credits. Mr. Hilton. By arrangement. Textile Building.

Operation and fixing of machines. Grinding and setting cards.

Tex. s104. Knitting I. Two credits. Mr. Lewis. By arrangement. Textile Building.

Selection and preparation of knitting yarns, knitting mechanisms, plain and rib knitting machines, circular ribbers, and circular automatic machines.

Tex. s105. Knitting Laboratory I. One, two, or three credits. Mr. Lewis. By arrangement. Textile Building.

Operation of machines, practical experiments, hosiery analysis, topping, transferring, and looping.

Tex. s106. Fabric Structure and Analysis. Two or four credits. Mr. Lewis. By arrangement. Textile Building.

Systems of numbering woolen, worsted, silk, linen, rayon, and cotton yarn. Plain, twill, and sateen weaves. Ornamentation of plain weaves; wave designs; pointed twills; diamond effects; plain and fancy basket weaves; warp and filling rib weaves.

Analyzing plain, twill, sateen, and other fabrics made from simple weaves, ascertaining the number of ends and picks per inch in sample. Fabric analysis calculations.

Tex. s108. Power Weaving Laboratory. One or two credits. Mr. Hart. By arrangement. Textile Building.

Operating and fixing of plain, automatic, and drop-box looms. Pattern chain building for drop-box looms.

Tex. s201. Yarn Manufacture II. Three credits. Mr. Hilton. By arrangement. Textile Building.

Construction of draw frames; sliver lapper; ribbon lapper, comber; mechanical and electrical stop motions, description and setting of the different parts; weighting of rolls; types of roll covering; care of machines; fly frame builder and differential motions.

Tex. s202. Yarn Manufacture Laboratory II. One, two, or three credits. Mr. Hilton. By arrangement. Textile Building.

Operation and fixing of draw frames; sliver lappers; ribbon lapper; comber and fly frames. Changing of hank roving and the setting of rolls and speeder motions.

Tex. s205. Fabric Design and Analysis I. Three or six credits. Mr. Hart. By arrangement. Textile Building.

Construction of fancy weaves, such as broken twills, curved twills, entwining twills, granite weaves. Imitation leno; honeycomb weaves; fabrics backed with warp or filling; fabrics ornamented with extra warp or filling; combining weaves together to produce new patterns.

Analyzing samples of fancy fabrics for design; drawing in draft, reed, and chain plan. Calculating particulars to reproduce fabric from data obtained from sample.

Tex. s208. Dobby Weaving Laboratory I or II. One, two, or three, or six credits. Mr. Hart. By arrangement. Textile Building.

Preparation of warps for weaving cotton and rayon fabrics on dobby

looms; starting up warps in looms; fixing single and double index dobbies; pattern chain building; operation of dobby looms.

Tex. s301. Yarn Manufacture IV. Three credits. Mr. Hilton. By arrangement. Textile Building.

Spinning; spooling; twisting. Description and setting of different parts. Builder of motions for warp and filling. Bobbin holders, thread guides, traverse motions. Ply yarns. Calculations for twist, speed, and production.

Tex. s320, s321, s322. Cotton and Rayon Fancy Design I. Three, six, or nine credits. Mr. Shinn. By arrangement. Textile Building.

Designing fancy and jacquard fabrics. These fabrics include tablecloths, figured double plain; matelasse, velvet, corduroy. Leno weaves with one, two, or more sets of doups. Combinations of plain and fancy weaves with leno. Methods of obtaining leno patterns. Methods of making original designs by combinations of color, weave, and sketches. Designs for table napkins, table covers, dress goods, draperies.

Tex. s311. Fabric Analysis. Two credits. Mr. Shinn. By arrangement.

Analyzing samples of cotton, wool, worsted, linen, rayon, and silk fabrics for size of yarns, ends and picks per inch, weight of warp and filling, so as to accurately reproduce samples analyzed. Obtaining design, drawing in draft, chain, and reed plan for fancy fabrics, such as stripes, checks, extra warp and extra filling figures, leno fabrics, jacquared fabrics, draperies.

ZOOLOGY

Zool. s101. General Zoology. Five recitations, four hours laboratory. Four credits. Mr. Bostian. 9 M. T. W. T. F. Laboratory arranged. Z. 7.

A study of the structures and functions of the vertebrates, with special reference to man and the rat.

Zool. s102. Economic Zoology. Five recitations, four hours laboratory. Four credits. Mr. McCutcheon. 8 M. T. W. T. F. Laboratory arranged. Z. 8.

An elementary study of animals with special reference to the more important economic groups; designed to give the student a general knowledge of the animal kingdom.

Zool. s304. Genetics. Four credits. Mr. Bostian. By arrangement. Prerequisite: Bot. 101 and 102 or Zool. 101.

Basic principles of heredity and variation. Students carry on and analyze breeding experiments, analyze inheritance in various animals and plants.

Courses for Graduates Only

Zool. s403. Research in Zoology. Three credits. Mr. Metcalf, Mr. Mitchell, Mr. Bostian. By arrangement. Prerequisite: Eighteen term credits in Zoology.

The student will be assigned a problem in development morphology, ecology, physiology, genetics, or taxonomy.

THE WOMAN'S COLLEGE

OF

THE UNIVERSITY OF NORTH CAROLINA

GREENSBORO, N. C.

June 9 to July 17, 1937

A second Summer Session has been requested and approved by the President and the Summer Session Council. If funds are made available, it will begin immediately at the close of the first session.

The chief purpose of the Summer Session is to serve students and teachers of North Carolina to the greatest possible extent at the least possible cost.

Distinctive features of the Summer Session at the Woman's College are:

1. Courses in elementary and high school education.
2. Graduate work in Home Economics and Business Education.
3. New courses in Art.
4. Regular and special courses in Music.
5. Observation and Nursery School.
6. Conferences in Home Economics, Education, and Art.
7. Placement service without charge.
8. Social and recreational program under trained leadership.

Courses will be offered for college students who wish to advance their standing or make up work.

Expenses are as follows:

Fees and charges	$20.00
Board, room, and laundry	33.00
	$53.00

For further information write:

DEAN W. C. JACKSON,
The Woman's College,
Greensboro, N. C.

THE UNIVERSITY OF NORTH CAROLINA

CHAPEL HILL, N. C.

The Summer Session 1937 (first term, June 10-July 21, second term, July 22-August 28) offers undergraduate and graduate courses in Archaeology, Astronomy, Botany, Chemistry, Comparative Literature, Dramatic Art, Economics and Commerce, Education, English, Fine Arts, Geology, German, History, Latin, Law, Library Science, Mathematics, Music, Pharmacy, Physical Education, Physics, Political Science, Psychology, Public Welfare, Romance Languages, Rural Social Economics, Sociology, and Zoology, by regular members of the teaching staff and distinguished visiting professors.

Numerous special courses, conferences, seminars, and institutes in the fields of the Social Sciences, Public Welfare, Political Science, Music, and Education and Public Relations will be held during the first term of the Summer Session.

EXPENSES

(For each term of six weeks)

LIVING ACCOMMODATIONS

Room rent in University Residence Halls (other than Spencer Hall or the Graduate Clubs)	$ 7.50
Room rent in Spencer Hall and Graduate Woman's Club:	
Single room	22.50
Double room	15.00
Room rent in Graduate Men's Club	15.00
Board in University Dining Hall Cafeteria (Estimated at $20.00 a month)	30.00

OTHER EXPENSES

Registration fee for each student	13.50
Course fee for each quarter-hour credit per term	2.25

For further information write:

R. B. HOUSE,
Dean of Administration,
Chapel Hill, N. C.

STATE COLLEGE RECORD

VOL. 37. DECEMBER, 1937 No. 4.

SUMMER SESSION

June 13—July 22, 1938

Announcement of Courses

NORTH CAROLINA STATE COLLEGE
OF
AGRICULTURE AND ENGINEERING
OF THE
UNIVERSITY OF NORTH CAROLINA

STATE COLLEGE STATION
RALEIGH

PUBLISHED MONTHLY BY THE NORTH CAROLINA STATE COLLEGE
OF AGRICULTURE AND ENGINEERING

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SUMMER SESSION, 1938

The twenty-fifth Summer Session of the North Carolina State College of Agriculture and Engineering of the University of North Carolina begins Monday, June 13th, and closes Friday, July 22nd.

COLLEGE CREDIT

Beginning with 1924-1925, the regular session of the State College was divided into three terms; consequently "credit," as used throughout this bulletin, refers to term credit, or twelve weeks' work, unless otherwise designated. Therefore, in order for the college-credit courses to count for a full term's work, they will be given, if for five credits, ten periods a week; if for three credits, five periods a week. Since, however, no student will be allowed to take more than eighteen hours of work per week without special permission, this restriction will prevent students taking more than one ten-period course.

It is important to notice that teachers are required to take at least fifteen hours weekly in order to receive credit for one summer session. Additional credits may be taken by students if they have points to justify, and by teachers upon approval. In no case will a student be allowed more than twelve credits of work.

AUDITORS

Students not carrying a full load, and others who receive permission, may audit classes by paying a $5.00 fee for each class attended. This does not permit the individual to receive credit for the course, and he is not permitted to take part in class discussions or receive any individual assistance from the teacher.

ADMISSION OF WOMEN

A recent ruling of the Board of Trustees allows this institution to accept women students for the summer session on the same basis as men. During the regular session, however, women students must present a minimum of forty-eight semester hours of advanced standing for admission, and be enrolled in one of the regular curricula.

DEGREES IN EDUCATION

No degrees in Education will be awarded after July, 1938, except in Agricultural Education and Industrial Arts Education. Teachers planning to receive their degrees at this institution in other fields of Education should arrange to complete their work by that time.

TEACHING CERTIFICATES

We have received the following information from the Division of Certification of the State Department of Public Instruction which will be of interest to all teachers attending summer school to raise their certificates:

The State Department of Public Instruction is anxious to administer in a most effective way all certificate problems growing out of summer school attendance. The enterprise, however, is a coöperative one, involving the individual teacher, the institution conducting the summer school, and the

State Department of Public Instruction. Looking toward a most satisfactory administration of these problems, the following general observations are made:

1. All teachers should fill out the back of the summer school card, giving the exact name which the certificate carries, the kind of certificate held, the serial number, et cetera. A teacher's registration should not be considered complete without this information.
2. Teachers who are expecting a change in their certificate for 1938-39 as a result of their summer school work, should wait for four weeks before making any inquiry of the State Department of Public Instruction. Last year about 11,000 summer school records were handled. It should be reasonable to assume a month's time would be required for handling these records and issuing the certificates growing therefrom.
3. Teachers who are expecting their certificates to be raised as a result of summer school attendance should not send their old certificates to the State Department of Public Instruction. This is not necessary for the issuance of the new certificate.
4. Teachers should not send to the State Department of Public Instruction their personal reports of summer school work. The report must come direct from the institution, and will be sent by the institution if the teacher has properly registered.
5. Institutions should send the reports to the State Department of Public Instruction as promptly as possible after the close of the summer school. At present there is considerable variation among the institutions in their practice with reference to this point.

FEES AND EXPENSES FOR SIX-WEEKS PERIOD

All fees and other charges are payable in advance or upon registration, and all checks should be payable to North Carolina State College.

Room Rent (per person)	$ 7.50
Board at College Cafeteria (estimate)	30.00

College Fees

Registration Fee	$ 3.00
Course Fee (for each quarter hour of credit)	3.00
Medical Fee	1.00
Laboratory Fee for students taking surveying	2.00

All students occupying a room alone will be charged $10.00.

There will be a key deposit of twenty-five cents, which amount will be refunded when the key is returned.

There will be a late registration fee of $2.50 for all students who do not complete their registration on Monday, June 13th.

BOARD

The College maintains an excellent cafeteria where charges are reasonable. Students can purchase meal tickets at a reduced rate, so that board for the six-weeks period will be approximately $30.00.

ROOMS

Students will be assigned to rooms upon their arrival at the College. In case it is desired to change the room assignments, permission to do so must first be obtained from the Superintendent of Buildings. In no case may a room be taken until it has been regularly assigned.

The College rooms are supplied with necessary furniture. Each student, however, should bring towels, sheets, one pillow and two pillowcases, and two bedspreads for a single bed.

REGISTRATION

All registrations will be conducted in Frank Thompson Gymnasium beginning at 9 a.m. on June 13th. Students are expected to report in person on Monday, June 13th, so that they may begin class work on the morning of Tuesday, June 14th, at 8 o'clock. Deans and Directors of Instruction will be present to advise students relative to courses. The administration reserves the right to cancel any course for which the registration is less than eight. The final date for completing registration is 5:00 p.m. Wednesday, June 15th.

DIPLOMAS

Students expecting to receive a degree at the end of the summer session should come to the Office of Registration early in the session, to be sure they are meeting all the requirements for graduation. Diplomas will not be awarded until the candidates have been approved by the college faculty at their September meeting.

LIBRARY FACILITIES

In addition to the resources of the D. H. Hill Library, the facilities of the Olivia Raney Library and the State Library will be available to Summer School students for reference work.

SOCIAL AND RECREATIONAL FACILITIES

A reception for students and faculty, followed by other social and recreational events, serve to foster a congenial spirit in the student body. Weekly assembly periods with varied and interesting programs; voluntary student musical organizations; a weekly open forum for the discussion of timely subjects; the social center at the Y. M. C. A.; weekly dances; and supervised recreation, consisting of swimming, tennis, baseball, volleyball, basketball, and handball, provide a wide range of recreational activities.

Being the capital of one of the original thirteen states, Raleigh is unusually rich in historical collections, fine public buildings, and interesting places and memorials. It is interesting, also, for its churches, its schools, its hotels, its office buildings, and its growing commercial and industrial activities. Opportunities will be given the students to visit the places of interest.

The various churches welcome all Summer School students to Sunday school and church services, and their pastors have taken a very friendly interest in the morning services at the College auditorium. Raleigh will be found in all respects a delightful place of residence.

SPECIAL SHORT COURSES

During the summer the College offers several short courses. These courses are designed to be of practical value to people already employed in particular fields of work.

The total cost of any of these short courses, including cost of registration and room rent, will not exceed $3.00. Board is not furnished, but can be secured at the College Cafeteria.

For the summer of 1938 the North Carolina State College is offering the following short courses. Others will be offered in future summer schools whenever there are sufficient demands. These courses do not give college credit.

Short Course for Janitors and Firemen

The Mechanical Engineering Department of North Carolina State College, as a feature of the summer session, conducts a short course of six days for white janitors and firemen, teaching the fundamental principles of combustion, how to fire economically, and giving general instructions about heating systems and operation of the plant. The mornings are given to lectures and talks by members of the College faculty and representatives from other State departments, and the afternoons are given over to the practical problems and to inspection trips to different schools. Applications for admission should be sent to Professor L. L. Vaughan, North Carolina State College, Raleigh, North Carolina. Dates will be announced later.

Short Course for Waterworks Operators

The Chemical Engineering Department of the North Carolina State College conducts a three-day short course for waterworks operators. The chemical background of water treatment will be presented simply, definitely, and comprehensively, with the purpose of making clear to waterworks men the nature of the chemicals used and their reactions, the principles involved in the chemical treatment of water for municipal and for industrial use, and an explanation of the control processes. Each individual will be provided with a short lithoprinted book of complete lessons studied, every lesson accompanied by experimental demonstrations to make the study concrete and practical. The course is so designed to present in a clear, practical way the fundamental principles of chemical treatment of water so as to give a measure of understanding and assurance in the minds of waterworks men in their waterworks practice. Classes will be held from 8 a.m. to 1 p.m. and from 2 p.m. to 4:30 p.m. Application for admission should be sent to Professor E. E. Randolph, North Carolina State College, Raleigh, North Carolina. Dates will be announced later.

Short Course for Gas Plant Engineers and Operators

The Chemical Engineering Department of the North Carolina State College conducts a three-day short course for gas plant engineers and operators. The course will include a comprehensive study of the fundamental principles of the manufacture of municipal and of industrial gas, the chemical reactions and principles involved, engineering problems, and control methods, together with clear, simple, and practical study of chemical nature of commercial gases, and of associated products; maintenance of uniform quality of product, prevention of losses and operation difficulties, and the chemical background of the various phases of gas production. The course is intended to be of definite help to operating men in gasworks. The class work will be fully illustrated with practical experiments. Classes will be held from 8 a.m. to 1 p.m. and from 2 p.m. to 4:30 p.m. Application for admission should be sent to Professor E. E. Randolph, North Carolina State College, Raleigh, North Carolina. Dates will be announced later.

COLLEGE PREPARATORY MATHEMATICS AND ENGLISH

There are a large number of students applying for admission who are deficient in the mathematics requirement for college entrance. This is particularly true of those students who desire to take engineering.

Tests conducted at this College for several years show conclusively that students poorly prepared in English have difficulty with all their major college studies. The College Preparatory Course in English will improve the student in the three most important aspects of English: reading, writing, and speaking.

Plane geometry is required of all freshmen for college entrance. Since many of the smaller high schools in the State do not offer this subject, it is given here so that students may enter college without conditions. Students cannot begin their freshman mathematics without this course.

Solid geometry is an entrance requirement for all engineering freshmen. It may be taken as an extra load during the second term of the freshman year. However, securing this training during the summer will be of great assistance to the student in his freshman year.

Many students having passed high school algebra are still poorly prepared for college mathematics. This is due to the short terms in the high school, overloaded teachers, and the fact that two or more years often elapse between taking high school algebra and entering college. A review course in algebra is offered to enable the student to secure a good foundation for his college mathematics.

In an effort to avoid these difficulties and to prepare students more thoroughly for freshman work, the College is offering this special college preparatory instruction in mathematics and English during the summer session. High school students planning to enter college are advised to consider this special instruction for the following reasons:

1. Better preparation means a better college record, which is often the basis of future recommendations and employment.
2. The removal of conditions which eliminate many undesirable irregularities.
3. Gaining experience in activities on a college campus which will aid in making a better start in September.
4. Lessening the possibility of scholastic failure in college.

The cost of this instruction is very reasonable. The estimate of expenses for the six weeks is as follows:

1. Room rent	$ 7.50
2. Board in college cafeteria (estimate)	30.00
3. Registration fee	3.00

To these items should be added the tuition charge for the courses as listed in the description of courses given below:

Eng. s50. College Preparatory English. Five hours a week. No college credit. Staff. 8 M. T. W. T. F. Pu. 108. Tuition, $9.00.

A course in the fundamentals of reading, writing, and speaking. Special emphasis will be given to the needs of the individual students; conferences will be held for the purpose of directing the activities of the course.

Math. s1. Plane Geometry. Ten hours a week. No college credit. Staff. 11-1 M. T. W. T. F. P. 100. Tuition, $15.00.

The usual theorems and exercises of plane geometry, as given in the preparatory and high schools.

Math. s2. Solid Geometry. Five hours a week. No college credit. Staff. 10 M. T. W. T. F. P. 100. Tuition, $9.00.

Selected theorems and exercises, emphasizing particularly the practical aspects of the subject, such as the volumes and surfaces of prisms, pyramids, cylinders, cones, the frustums of pyramids and cones, and the sphere.

Math. s3. Elementary Algebra. Ten hours a week. No college credit. Staff. 8-10 M. T. W. T. F. P. 100. Tuition, $15.00.

The usual topics in elementary algebra, including addition, subtraction, multiplication, division, fractions, exponents and surds, graphs, and quadratic equations.

SUMMER INSTRUCTION IN FORESTRY

June 7 to August 13

The regular summer instructions in forestry for sophomores from June 7 to August 13 will be divided as follows:

Surveying—June 27 through July 16.
Dendrology—June 7 through June 18; and July 18 through July 23.
Mensuration—August 1 through August 13.
Silviculture—June 20 through June 25; and July 25 through July 30.

The expenses for the entire period will be as follows:

Registration fee	$ 5.00
For each credit scheduled	3.00
Room and board, based on last year's expenses (estimated)	50.00
Bus fee	22.00

The courses listed below are required and carry the regular college credit as indicated. The work is carried on entirely in the field and the class is responsible for its own program of camp routine. The students furnish their own board and any facilities other than the beds and housing. The registration in these courses is restricted to regularly enrolled students, unless a student is admitted as a special student under the same conditions that a special student would be allowed to take work in the regular courses.

Civil Engineering s101. Surveying and Mapping. 3 Credits. Mr. Fontaine and Mr. Bramer.

Includes Boundary Surveys; Topographical Surveys and calculations of sections of the school forest areas. A complete topographic map including all field data is required.

For. s200. Mensuration. 3 Credits. Mr. Slocum and Mr. Miller.

The summer course in mensuration consists of two weeks field work. The work is carried on at the Hill Forest Camp or on the White Oak Pocosin. Practical work in timber cruising, stem analysis, mill studies, log scaling and collection of data for yield, volume and stand tables is carried out.

For. s203. Silviculture. 3 Credits. Mr. Miller and Mr. Slocum.

Classification of forest types. Reproduction studies. Establishment and measurement of sample plots. Correlation of depth of water table with site quality. This work is carried on at the White Oak Forest in the coastal section of North Carolina.

For. s211. Dendrology. 3 Credits. Mr. Slocum and Mr. Miller.

North Carolina is well suited for the study of dendrology. Representative trees of eastern United States are found here, scattered throughout the State. The summer course in dendrology consists of three weeks field work, one week being spent in each of the sections of the State, namely, the Mountains, Piedmont, and Coastal Plain.

SPECIAL THREE WEEKS COURSES FOR TEACHERS OF VOCATIONAL AGRICULTURE

June 13 to July 1

The State College Summer Session will again offer special three weeks courses for teachers of vocational agriculture from June 13 to July 1. Courses will be offered in both subject matter and professional fields, and an effort will be made to arrange the work to meet the most urgent needs of teachers. A special announcement of these courses will be issued soon.

The expenses for each three weeks term will be as follows:

Registration fee	$ 1.50
For each term credit scheduled	3.00
Room rent (each student—two in a room)	4.00
Board (estimate of cafeteria cost)	15.00
Infirmary fee	.50

EDUCATIONAL CONFERENCES

Vocational Education

Conferences are being arranged for the study of topics which will be of interest to the student body and those superintendents, principals, and teachers who are doing work in the several fields. Special notices regarding dates, programs, and participants will be sent later. Plans are being made for a conference on each of the following: (1) Vocational Guidance, (2) Vocational Education, and (3) Social influences at work in the field of vocational education. These conferences held in succeeding weeks will last but the one day, with afternoon and evening sessions.

Unit Courses for CCC Camp Advisers

June 13-25, 1938

A two weeks session especially for Educational Advisers of the Civilian Conservation Corps. The plan is to conduct such classes as will meet the needs of individual advisers and to hold conferences and discussions of the general phases of the work to be undertaken in the camps. There will be opportunities for instruction in shop work, drawing, agriculture, methods of procedure, and vocational guidance.

There will be a charge of $2.50 for room rent, $10.00 for registration fee, and a small sum for actual cost of materials used. Meals may be procured at the college cafeteria or elsewhere. See page 12 for instruction as to what is needed in room.

COURSES TO BE OFFERED IN THE SUMMER SESSION

ABBREVIATIONS FOR BUILDINGS

C.—Ceramic
C.E.—Civil Engineering
G.—Gymnasium
H.—Holladay
P.—Page
P. & E.—Physics and Electrical Engineering Building
Pe.—Peele Hall
Pk.—Polk Hall
Pr.—Primrose
Pt.—Patterson
R.—Ricks
T.—Textile
Pu.—Pullen Hall
W.—Winston
Z.—Zoology Building

*The courses appearing hereafter with numbers 100, 200, and the 300 courses, which are starred, may be taken for undergraduate credit only.

AGRICULTURAL ECONOMICS

Agr. Econ. s260. Agricultural Economics. Five hours a week. Three credits. Mr. Forster. 10 M. T. W. T. F. R. 207. Prerequisite: Econ. 102 or 103.

A study of the economics of agricultural production; marketing of farm products; farm credit; land tenure and other major economic problems of the farmer.

Agr. Econ. s362. Farm Management. Five hours a week. Three credits. Mr. Forster. 12 M. T. W. T. F.

In this course the problems of farm management will be studied from the practical or realistic point of view. Among the more important problems which will be studied are: the selection and combination of farm enterprises, the relation of the size of the farm to profits, factors involved in the selection of farm, farm implements and machinery, farm rental contracts—their content and how they should be prepared,—the physical layout of the farm and its relation to crop rotation, use of machinery and labor, the responsibilities and functions of the farmer as a manager, the importance of farming practices or obtaining the optimum combination of factors used in production, economic reports as aids to the organization and management of the farm, the proper use of farm credit in the operation and management of the farm.

Agr. Econ. s370. Agricultural Extension Methods. Three credits. Prerequisite: Senior or graduate standing. Dean Schaub and staff. Hours by arrangement.

A study of office record systems, office management, program determination, program development, reports and their use; and the obtaining, preparation, and use of material in Extension teaching.

Rur. Soc. s302. Rural Sociology. Five hours a week. Three credits. Mr. Matthews. 11 M. T. W. T. F. R. 207. Prerequisite: Soc. 103 or Econ. 102.

The culture, social organization, and social problems of rural people, with special reference to Southern rural life and proposed programs of development.

AGRICULTURAL ENGINEERING

Agr. Eng. s130. Farm Equipment. Three credits. Mr. Giles. By arrangement. Pt. 4.

A study of modern mechanical equipment for the farm.

Agr. Eng. s135. Terracing and Drainage. Three credits. Mr. Giles. By arrangement. Pt. 4.

A study of the different methods of disposing of surplus water and the prevention of erosion.

ANIMAL HUSBANDRY AND DAIRYING

A. H. s101. Animal Nutrition I. Three credits. Mr. Ruffner. By arrangement.

A study of animal nutrition; physiology of digestion; nutrients; feeding standards; economical and balanced rations. Practical work given.

A. H. s201. Swine Production. Three credits. Mr. Hostetler. By arrangement.

A study of the adaptability of swine, with emphasis on feeding, judging, and management.

A. H. s202. Animal Breeding. Three credits. Mr. Ruffner. By arrangement.

A study of breeding and improvement of our animals; a first-hand study of successful breeding establishments and their problems.

A. H. s206. Farm Meats I. Three credits. Mr. Nance. By arrangement. Elective of juniors and seniors.

A study of the composition and value of meat, with practice work in slaughtering and cutting.

A. H. s208. Dairying. Three credits. Mr. Haig. By arrangement.

The secretion, composition and properties of milk are studied, with factors influencing quality and quantity of milk and cream. The use of the Babcock tests, butter making on the farm, and operation of cream separators constitute the laboratory work.

A. H. s211. Animal Nutrition II. Three credits. Mr. Ruffner, Mr. Haig. By arrangement. Prerequisite: A. H. 101.

A study of all feeding stuffs used in America; laws controlling feeding stuffs; preparation of feeds; home-mixed and commercial feeds.

A. H. s304. Herd Improvement. Three credits. Mr. Haig. By arrangement.

This course is designed for training students as supervisors of herd improvement associations in North Carolina. Rules for advanced registry are studied, and practical work in keeping feed costs, the Babcock test, and bookkeeping necessary for dairy associations.

Courses for Graduates Only

A. H. s402. Research Studies in Animal Husbandry. Three credits. Prerequisite: Eighteen credits in A. H. Staff. By arrangement.

An intensive study of experimental data.

BOTANY

Bot. s101. General Botany. Five recitations, four hours laboratory. Four credits. Mr. Shunk. 8 M. T. W. T. F., 2-4 M. W. Pt. 38.

Nature of the higher plant. A course presenting the fundamentals of the structure and function of the typical flowering plant.

Bot. s102. General Botany. Four credits. Mr. Shunk. 9 M. T. W. T. F., 2-4 T. Th. Pt. 38.

Survey of the plant groups. An introduction to the various major kinds of plants through the study of the life histories of types.

Bot. s203. General Bacteriology. Five recitations, four hours laboratory. Four credits. Mr. Shunk. Prerequisite: Botany 102 or equivalent. 11 M. T. W. T. F., 2-4 T. Th. Pt. 38.

An introduction to the principles of bacteriology. Laboratory work on modern cultural methods of handling and studying bacteria.

Courses for Graduates Only

Bot. s402. Bacteriology: Special Studies. Three credits. Prerequisite: Botany 203, 302. Mr. Shunk. By arrangement.

Special work on restricted groups of bacteria, such as nitrogen bacteria of the soil, milk organisms, and special groups of bacteria in water.

CHEMISTRY

Chem. s101. General Chemistry. Five hours in classroom and four hours in laboratory each week. Four credits. Equivalent to first term General Chemistry as given in the regular college year. Mr. Williams or Mr. Jordan. 8 M. T. W. T. F., 1-5 T. W. 114.

Composition and properties of air and water. First principles of chemistry, such as atomic theory, laws of chemical combination, valence, chemical formulas and equations, oxidation, reduction, behavior of gases and solutions. Study of a few typical elements, such as oxygen, hydrogen, carbon, and nitrogen, together with their simpler compounds.

Chem. s103. General Chemistry. Five hours in classroom and four hours in laboratory each week. Four credits. Equivalent to second term General Chemistry as given in the regular college year. Mr. Jordan. 10 M. T. W. T. F., 1-5 Th. W. 102.

Particular attention given to chlorine, sodium, nitrogen, sulphur, fluorine, bromine, and their compounds. Study of such common substances as salt, lye, soda, carbon disulfide, prussic acid, petroleum, coal tar, acetylene; ammonia and its more interesting uses, such as in ice machines; sulphur dioxide in household refrigerators and as a bleaching and germicidal agent; compounds of nitrogen in warfare and agriculture. Introduction to acids, bases, salts, ionization, hydrolysis, equilibrium, the periodic law and the new theories of the structure of the atom.

Chem. s105. General Chemistry. Five hours in classroom and four hours in laboratory each week. Four credits. Equivalent to third term General Chemistry as given in the regular college year. Mr. Williams or Mr. Jordan. 11 M. T. W. T. F. Laboratory 1-5 T. W. 114.

Chemistry of clays, ceramics, glass, cement, soils, fertilizers, insecticides, lime, hard water, alloys, paints, storage batteries, photography, flames and explosions. Compounds and properties of phosphorus, arsenic, bismuth, silicon, boron, potassium, calcium, magnesium, zinc, aluminum, bismuth, lead, nickel, copper, mercury, silver, gold, platinum, and other less common elements. Thermochemistry, colloids, and radioactivity.

Chem. s211. Qualitative Analysis. Two hours lecture, with four laboratory periods of three hours each per week. Equivalent to one term of college work. Five hours credit. Prerequisite: General Chemistry. Mr. Williams or Mr. Caveness. 10 T. Th.; laboratory to be arranged. W. 217.

A systematic study and separation of the metallic ions and non-metallic ions into their respective groups, their identification and the chemical reactions involved. The last two weeks will be given over to the complete analysis of mixed salts, compounds, and alloys.

Chem. s212. Quantitative Analysis, A. Two lectures and twelve hours laboratory. Equivalent to one term of college work. Five hours credit. Prerequisite: Qualitative Analysis. Mr. Williams or Mr. Caveness. W. 217.

This work will deal with the theory and practice of making up and standardizing acids, bases, di-chromate and permanganate solutions, also the determination of the strength of unknown acids and bases, the analysis for the per cent purity of iron ores, oxalates, sulphates, magnesium, phosphate rock, etc.

Chem. s213 (214). Quantitative Analysis. Five credits. Mr. Williams or Mr. Caveness. Required of sophomores in Chemical Engineering and those majoring in Chemistry. Prerequisite: Chem. 211. By arrangement. W. 217.

A continuation of Chem. 212. Substances of more difficult nature are analyzed—minerals, steel, alloys, limestone, Paris green, etc.

Chem. s241. Introduction to Organic Chemistry. Four hours class and five hours laboratory. Four credits. Mr. Williams. Prerequisite: Chem. 101, 103, 105. 8 M. T. W. T., 2-4 M. W.

Hydrocarbons, alcohols, aldehydes, ketones, acids, ethers, esters, amino acids, and benzene derivatives; carbohydrates, fats, proteins, and related compounds; vitamins, enzymes, hormones, flavors.

Chem. s321. Organic Chemistry. Four hours class and five hours laboratory for each four hours credit Hours by arrangement. Mr. Williams. (This course has a total of twelve credits and continues through the regular college year.) Prerequisite: Chem. 101, 103, 105.

Aliphatic and aromatic compounds; practical applications; methods of preparation and purification of compounds.

†**Chem. s340. Food Products and Adulterants.** Five hours a week. Three credits. Prerequisite: Chem. 101, 103, 105, and 241. Mr. Satterfield. 9 M. T. W. T. F.

Food principles, cereals, starches, sugars, fats, milk and milk products, the packing-house, food preservation, beverages, spices and condiments; food legislation.

†**Chem. s341. Vitamins.** Five hours a week. Three credits. Prerequisite: Chem. 241 or 321. Mr. Satterfield. 12 M. T. W. T. F.

Application of vitamin hypothesis to animal nutrition; history, nomenclature, properties, distribution, effects of deficiencies, and vitamin values.

† Not offered in 1938.

Chem. s344. Food and Nutrition. Five hours a week. Three credits. Prerequisite: Chem. 241 or 321. Mr. Williams. 10 M. T. W. T. F.

Carbohydrates, fats, proteins, amino acids, minerals, fiber, vitamins, and enzymes; nutritive value of food materials; digestion, food idiosyncrasy; acidosis and alkalosis.

ECONOMICS

Econ. s102. Introduction to Economics. Five hours a week. Three credits. Mr. Leager. 8 M. T. W. T. F. Pe. 13.

This course is designed for those students who do not feel able to devote more than one term to the study of economics.

It includes a study of the great fundamental economic laws which apply to all professions and occupations; a study of the production, distribution, and value of economic goods, and a study of the institutions, agencies, and ideals which dominate, operate, and control the manner, means, and methods of making a living.

Econ. s103a. General Economics. Five hours a week. Three credits. Mr. Moen. 8 M. T. W. T. F. Pe. 109.

This is the first term of the regular college course in General Economics.

An introduction to the general field of economics. A study of economic institutions and the general principles governing the production and distribution of wealth under the existing economic organization.

Econ. s103b. General Economics. Five hours a week. Three credits. Mr. Leager. 9 M. T. W. T. F. Pe. 13.

This is the second term of the regular college course in General Economics.

Econ. s201a. Accounting I. Five hours a week. Three credits. Mr. Shulenberger. 9 M. T. W. T. F. Pe. 108.

This is the first term of the regular college course in Accounting.

Fundamental principles of theory and practice; interpretation of structure, form and use of business statements.

Econ. s210. Business Organization. Five hours a week. Three credits. Prerequisite: Econ. 102 or 103. Mr. Shulenberger. 8 M. T. W. T. F. Pe. 108.

Forms of business enterprise, single enterprise, partnership, joint-stock company, corporation, and principles of business management.

Econ. s211. Business Law. Five hours a week. Three credits. Prerequisite: Econ. 102 or 103. Mr. Shulenberger. 10 M. T. W. T. F. Pe. 108.

Required of seniors in Ceramic, Chemical, Civil, Architectural, Electrical, and Mechanical Engineering. Elective for other students.

A general survey of the sources of law, fields of law, contracts, agency, sales, law of partnerships and corporations, negotiable instruments, bailments and carriers, personal property, suretyship and guaranty, bankruptcy, crimes in business.

Econ. s217. Advertising. Five hours a week. Three credits. Mr. Moen. 7 M. T. W. T. F. Pe. 109.

Principles and practices of advertising and its relation to the distribution and sales program.

Econ. s330. Principles of Insurance. Five hours a week. Three credits. Prerequisite: Econ. 103 or equivalent. Mr. Shulenberger. 11 M. T. W. T. F. Pe. 108.

Risk as an element of all agricultural and industrial activity. Such risks as can be covered by insurance are discussed, with the appropriate form of insurance, e. g., employer's liability, workmen's compensation, fire, life, and other forms.

Econ. s312a and s312b. Statistics. Five hours a week. Three credits. Elective. Prerequisite: Economics 102 or 103. Mr. Leager. 12 M. T. W. T. F. Pe. 108.

A study of the elements of statistical methods, collection and analysis of statistical data, graphical presentation, and analysis of problems.

Econ. s326. Public Finance—Taxation. Five hours a week. Three credits. Prerequisite: Econ. 103. Mr. Moen. 9 M. T. W. T. F. Pe. 109.

Classes of income and expenditure, taxation.

EDUCATION

Courses for Undergraduates

Ed. s203a. Educational Psychology. Five hours a week. Three credits. Required of students in Education; elective for others. Mr. Garrison. 11 M. T. W. T. F. H. 5.

Original nature and environment are analyzed in this course as to their function in the educational processes. The elementary principles of psychology are illustrated and studied as they relate to the learning process.

Ed. s203b. Educational Psychology. Five hours a week. Three credits. Required of students in Education; elective for others. Mr. Garrison. 10 M. T. W. T. F. H. 5.

This part of educational psychology is concerned with the physical and mental development of high school boys and girls. Social development; character development; emotional development and control; religious and moral development; and mental hygiene are topics given special consideration.

VOCATIONAL GUIDANCE.—Guidance is recognized as a part of the work of each teacher in the school. Pupils of all ages require assistance in the growth and progress through their school problems. Each stage of school development as elementary, junior high, senior high, and college, requires special attention which the individual teacher may render. In addition to the work done in the classroom, there is that of the school counselor and director of the work whose duty it is to provide materials and programs of work, together with the care of such special cases as require specific aid.

Vocational Guidance, Ed. s320, is a beginning course for advanced undergraduates and graduates, also for teachers in service who wish to help in guidance activities. Occupational Counseling, Ed. s412, is a graduate course for those who have had Ed. s320 and some experience in teaching, and those who have had a wider experience in school and industry. Closely correlated with these courses are those in psychology, sociology, economics, and testing.

Ed. s320. Vocational Guidance. Five hours a week. Three credits. Mr. Boshart. Prerequisite: Twelve credits in Education. 8 M. T. W. T. F. H. 16.

The course in Vocational Guidance is intended to give emphasis to the place of guidance in the school program. It will treat of the development of educational and vocational guidance, its relation to personnel work, principles and practices of guidance and employment, child legislation, and forms and records for school use.

Ed. s321. Vocational Education. Five hours a week. Three credits. Staff. Prerequisite: Twelve credits in Education. 11 M. T. W. T. F. H. 16.

This course, dealing with the problems of vocational education, is intended to give acquaintance with its underlying philosophy, its place in our system of education, the laws governing it, and the prevailing practices and administration. It is of particular interest to administrators and teachers who have or expect to have to do with the direction of educational work in agriculture, homemaking, industry, and commerce. It deals with all-day, evening, part-time, and general continuation of class work.

Ed. s324. Occupational Studies. Five hours a week. Three credits. Mr. Boshart. Prerequisite: Twelve hours in Education or equivalent. 10 M. T. W. T. F. H. 16.

This course is intended to acquaint teachers with the field of occupations, the selection of suitable materials, and their presentation to the student body. The classwork will consist of readings, reports, discussions, lectures, and visitations. Analysis of leading occupations will be made with the idea of selecting and preparing teaching units to be used for related subject matter courses.

Ed. s325. Methods of Teaching Industrial Education. Five hours a week. Three credits. Mr. Smith. 12 M. T. W. T. F. H. 16.

This course is intended for those persons who are teaching or have a desire to teach industrial education classes on a trade basis. It should be of special interest to industrial arts teachers who have had trade experience, academic teachers who have had work experience in industry sufficient to learn a trade, and men with several years' industrial experience who think they would like to teach.

Some of the topics that will be developed are: Federal regulations that must be met, aims and objectives, the selection of pupils, making analyses of occupation to be taught, organization of subject material into units, types of shops and equipment, and class organization.

Ed. s328. Diversified Occupations. Five hours a week. Three credits. Mr. Smith. 9 M. T. W. T. F. H. 16.

This course is planned for the training of coördinators of studies in diversified occupations. It is intended for experienced teachers who in addition to their teaching have had a couple of years of occupational experience.

In this course typical topics to be discussed are: Federal regulations that must be met, selling the idea to the community, planning related technical information, the selection of students, listing local occupations, selecting those occupations that are suitable, occupational analyses, how to start a new program, forms of agreement, equipment necessary, advisory committees, record forms and reports.

†**Ed. s330. Visual Instruction.** Five hours a week. Three credits. Prerequisite: Twelve credits in Education. Mr. Armstrong. 11 M. T. W. T. F. Pe. 201.

† Not offered in 1938.

An advanced course in the psychology, methods, and technique of visual instruction; its place and limits, evaluation and expense of various aids, aids available. Practice in the making and use of practical visual aids.

*Ed. s331. **Visual Aids in Social Sciences.** Five hours a week. Three credits. Prerequisite: Twelve credits in Education. Mr. Armstrong. S M. T. W. T. F. Pe. 201.

A detailed study of visual materials, devices, and procedures applicable to teaching the social sciences, including geography. Emphasis will be given to motivation, facilitating the learning process, and fixation. Various devices will be used by the class.

INDUSTRIAL EDUCATION.—The summer session will emphasize the preparation of teachers, supervisors, and principals for teaching and directing Industrial Education in the various communities of North Carolina. The rapid growth of Industrial Education in our State is creating a demand for a competent personnel for making this work a definite functioning element in education. Courses will be offered in subject matter, methods of teaching, administration, shop practice, and drawing.

Industrial Education depends largely upon the soundness of the philosophy underlying its introduction into the field of education. For this reason professionally minded teachers and administrators will welcome courses giving them a better basis for their classroom activity.

Principals, supervisors, and teachers are needed to introduce and develop the various phases of industrial education in our junior and senior high schools, part-time and continuation schools, and evening schools. The demand is for those who are familiar with both general and vocational education and at the same time capable of placing the proper emphasis upon the more practical phases of education. Supporting courses are offered in the Engineering and Textile Schools.

The underlying purpose of the courses offered in this field is to acquaint those who are responsible for developing the possibilities of industrial education and other shop activity in our school system with prevalent practices and to give helpful aids in program construction. The possibilities of creating interest and motivating school subjects are often lost sight of because of the lack of knowing how to utilize the everyday things about us.

For those who are interested in administrating and teaching industrial education, the following courses will be offered: The Theory of Industrial Arts and Practical Arts Problems are intended largely for the earlier grades while the Problems of the General and Unit Shop, Vocational Education, Occupational Studies, Methods of Teaching Industrial Education and Diversified Occupations are suited to the junior and senior high schools and vocational classes. These courses are correlated with those in mechanical drawing, woodwork, metal work, textiles, and auto-mechanics. They will be taught by instructors of wide experience and will be related to individual needs.

Teachers of academic subjects who have a background of experience in practical shop-work could readily prepare themselves to teach shop and drawing classes in the field of industrial education. The newer element in this field, Diversified Occupations, offers splendid opportunities for those who have had teaching experience and whose interests and abilities are suited to the development and organization needed by the coördinator.

The credit for these courses may be used in renewing certificates, raising certificates, earning new certificates, or college credit.

* Not offered in 1935.

Ed. s352. Theory of Industrial Arts. Five hours a week. Three credits. Prerequisite: Twelve credits in Education. Miss Bell. 11 M. T. W. T. F. H. 15.

A study of the value and place of Industrial Arts in the public school. A study of the industries will be made with the idea of making suitable selection of projects to correlate with other school subjects and to aid in the development of methods and directions for activity work in the early grades. Intended for teachers, supervisors, and principals. Emphasis will be placed upon the use of the Industrial Arts to motivate and sustain effort in the learning process.

Ed. s354. Practical Arts Problems. Five or ten hours a week. One and one-half credits or three credits. Perequisite: Twelve credits in Education or the consent of the instructor. Miss Bell. 9-11 M. T. W. T. F. H. 15.

Intended for the classroom teacher and supervisor for acquaintance with materials and how to use them. Instruction will be given in the making of posters, block printing, stenciling, work with plastics as clay and plasterine, making of baskets from reeds, raffia, and other materials, paper and cardboard instruction, and in the use of such other materials as are suited to the work in hand. It will be of aid to administrators in the development of the activity program.

Ed. s357. The Problems of the General and Unit Shops. Five hours a week. Three credits. Mr. Smith. 8 M. T. W. T. F.

Intended for those who are teaching or expect to teach shop work and drawing. Its purpose is to acquaint students with the possibilities of the general shop as compared with those of the unit shop and to aid in setting up procedures for each type of shop under conditions where they can best function. Those taking this course should take parallel courses in shop instruction, unless they have had considerable experience. Problems of organization, equipment, instruction sheets and their uses, and courses of study will be considered.

†**Ed. s360. Special Problems in Teaching Agriculture.** Five hours a week. Three credits. Prerequisite: Twelve credits in Education, including Methods of Teaching Agriculture. Messrs. Cook and Armstrong. 10 M. T. W. T. F. Pe. 201.

This course will consider special problems in agricultural teaching and the preparation of teaching plans, involving the use of survey information. Each student will prepare a program of work for a specified community.

Ed. s376. Psychology of Adolescence. Five hours a week. Three credits. Mr. Garrison. Prerequisite: Ed. 203 and six credits in Education. 12 M. T. W. T. F. H. 5.

A study of the nature, growth, social development, and interests of adolescent boys and girls. Especially designed for those concerned with the organization and direction of group activities for boys and girls in rural and industrial centers.

Ed. s381. Guidance and Discipline of Students. Five hours a week. Three credits. Prerequisite: Twelve credits in Education. Mr. Cook. 9 M. T. W. T. F.

Factors influencing character development; responsibilities and opportunities of teachers and administrators for the moral and civic conduct of their students; recent trends; difficulties; materials and procedures.

† Not offered in 1938.

Ed. s412. Occupational Counseling. Five hours a week. Three credits. Mr. Boshart. Prerequisite: Ed. 320, 332 or equivalent. 12 M. T. W. T. F. H. 11.

This course is intended for teachers of experience and those interested in the problems of guidance in school and life. Attention is given to group and individual counseling as it may be applied to the junior and senior high school, colleges, or placement offices, and to the procedures of conducting interviews and conferences. Information concerning occupational material will be organized, evaluated, and applied to type cases. The relation to personnel work will be considered as the functions of school and industry are studied.

Ed. s416. Problems in Agricultural Teaching. Five hours a week. Three credits. Prerequisite: Ed. 203, 307, and at least twelve other credits in Education and Agriculture. Experience in agricultural teaching will be accepted in lieu of Ed. 307. Staff. By arrangement. Pe. 201.

Investigations, reports, and a critical evaluation of present practices with constructive remedies. The content of the course will depend on the interests and needs of the individual members of the class.

Ed. s420. Agricultural Education Seminar. One credit. Mr. Cook, Mr. Armstrong. By arrangement. Prerequisite: Eighteen credits in Education.

A critical review of current articles and books of interest to students of agricultural education.

Ed. s421. Research in Special Fields of Education. Staff.

ENGINEERING

Arch. s107. Pencil Sketching. Five hours per week. Three credits. Mr. Paulson. 9 M. T. W. T. F. A. E. 307.

Quick sketching of objects as seen and imagined in perspective. Elementary principles of perspective, especially as an aid to visualization.

Arch. s113. Fine Arts for Teachers. Eight hours per week. Three credits. Mr. Paulson. 11 M. T. W. T. F., 12 M. W. F. P. & E. 307.

Black and white, and color drawing adapted to grade school use. Lettering, illustrating, poster making, etc.

Arch. s214. Art Appreciation for Teachers. Five hours per week. Three credits. Mr. Paulson. 8 M. T. W. T. F. P. & E. 307.

Picture study of the list suggested by the State Board of Education for grade school use, including paintings, architecture, and sculpture.

C. E. s102. Surveying I. Three credits. Mr. Geile and staff. Two sections: one section will run for three weeks, six days a week; the second section will run for six weeks, afternoons only. C. E. Building and field.

The use, care, and adjustment of surveying instruments; elementary land surveying, traverse lines, leveling, stadia measurements; topographical surveying, plane table surveying; office work in connection with field surveying. Laboratory fee $2.00. Text, Tracy, Surveying.

C. E. s240. Advanced Surveying. Three credits. Staff. Required in the summer immediately following the sophomore year in Civil Engineering. Prerequisite: C. E. 206 and 207.

Plane table practice, special problems in surveying practice; triangulation, railroad and highway spirals; hydrographic surveying with sextant; plane table problems; the use and rating of current meters; measurement of stream flow; drainage problems. Laying out proposed construction work. Topography, details, special problems. Laboratory fee $2.00.

E. E. s101. Electrical Engineering Fundamentals. Twelve hours a week. Six credits. Mr. Glenn. E. E. 103. Prerequisite: Math. 201, 202.

This course covers the second and third terms of the introductory course in Electrical Engineering. Electrical engineering problems, fundamental laws of electric, magnetic, and dielectric circuits. Text: Timbie and Bush. Principles of Electrical Engineering.

E. M. s201. Engineering Mechanics. (abridged). Five Hours a week. Three credits. Room CE 223. Mr. Smith or Mr. Conner, by arrangement. Prerequisite: Math. 201. Co-requisites: Math. 203 and Phys. 104. Text: Analytical Mechanics for Engineers by Seely and Ensign. Statics: Concurrent, parallel, and non-concurrent force systems; the determination of their resultants and conditions of equilibrium. Friction, centroids, and moments of inertia.

E. M. s202. Engineering Mechanics. (abridged). Five hours a week. Three credits. Room CE 223. Mr. Smith or Mr. Conner. By arrangement. Prerequisites: E. M. 201 and Math. 203. Co-requisite: Phys. 104. Text: Analytical Mechanics for Engineers by Seely and Ensign. Kinematics and Kinetics.

E. M. s211. Engineering Mechanics. Five Hours a week. Three credits. Room CE 222. Prerequisite: Math. 201. Co-requisites: Math. 202 and Phys. 104. Mr. Smith or Mr. Conner. By arrangement. Text: Analytical Mechanics for Engineers by Seely and Ensign. Statics Concurrent, parallel, and non-concurrent force systems; the determination of their resultants and conditions of equilibrium. Friction.

E. M. s212. Engineering Mechanics. Five hours a week. Three credits. Room CE 222. Prerequisites E. M. 211 and Math. 202. Co-requisites: Phys. 104 and Math. 203 Mr. Smith or Mr. Conner. By arrangement. Text: Analytical Mechanics for Engineers by Seely and Ensign. Kinematics, centroids, and moments of inertia.

E. M. s220. Strength of Materials. Five hours a week. Three credits. Room CE 222. Prerequisites: E. M. 202 or E. M. 212, Math. 203. Mr. Smith or Mr. Conner. By arrangement. Text: Resistance of Materials by Seely. Stresses in beams, columns and shafts. Shear, flexure, elementary study of deflection of beams, and the design of columns.

E. M. s230. Hydraulics. Five hours a week. Three credits. Room CE 223. Mr. Conner. By arrangement. Prerequisites: E. M. 202, or 213. Text: Hydraulics by Russell.

Fluid pressure, laws governing flow in pipes and conduits, flow through orifices and nozzles and over weirs; losses from friction and other sources. Methods of measuring the flow of streams; determination of water power.

M. E. s102. Engineering Drawing. Twelve or twenty-four hours a week. Three or six credits. Required of Engineering freshmen. Mr. Briggs. 8-10 or 8-12 M. T. W. T. F. S. P. 106.

Drawing-board work, covering lettering, orthographic projection, auxiliary projection, isometric projection, cabinet projection, intersection and development, working drawings, and blue-printing. Text: Engineering Drawing by French.

M. E. s103. Descriptive Geometry. Twelve hours a week. Three credits. Mr. Briggs. 8-10 or 10-12 M. T. W. T. F. S. P. 106.

This work covers the representation of geometrical magnitudes by means of points, lines, planes, and solids, and the solution of problems relating to them. Text: Applied Descriptive Geometry by Warner.

M. E. s104. Shopwork. Four, eight or twelve hours. One, two or three credits. Messrs. Maddison and Rowland. 8-10, 10-12, or 2-4 M. T. W. T. F. Shop.

Use of bench tools, making cabinet joints operation and care of woodworking machinery. Correct methods of staining, varnishing, filling, and gluing various kinds of wood. The forging of iron and steel. Instruction and practice in molding and core making. Cupola practice. Text: Lecturers' Notes.

M. E. s105. Shopwork. Eight or twelve hours a week. Two or three credits. Mr. Rowland. 8-10, 10-12 or 2-4 M. T. W. T. F. Shop.

Deals with elementary joinery, finishing, theory of dry-kilning and wood turning. Lectures, demonstrations, and practice in hand work and machine methods. Typical patterns and core boxes are constructed, such as solid, split, and loose-piece patterns; mounting of patterns on boards and their preparation for use in the foundry. Text: Pattern Making by Turner and Town.

M. E. s106. Shopwork. Eight or twelve hours per week. Two or three credits. Mr. Maddison. 8-10, 10-12 or 2-4 M. T. W. T. F.. Shop.

Lectures, demonstrations, and practice in molding and core making, furnace operations, melting and casting of ferrous and non-ferrous metals and their alloys. Sand testing. Text: Foundry Work by Stimpson, Gray and Grennan.

M. E. s107. Shopwork. Eight or twelve hours per week. Two or three credits. Mr. Maddison. 8-10, 10-12 or 2-4 M. T. W. T. F. Shop.

A study of the principles and practice as applied to the forging of wrought iron and steel. Lectures, demonstrations, and practice in forge welding. Tool making and heat treatment. Text: Lecturers' Notes.

M. E. s110. Mechanical Drawing. Eight or sixteen hours a week. Two or four credits. Mr. Briggs. 8-10 or 10-12 M. T. W. T. F. S. P. 106.

Drawing-board work, covering machine fastenings, pipe fittings, elementary cams, technical sketching, working drawings, tracing, and blueprinting. Text: Engineering Drawing by French.

M. E. s219. Machine Shop II. Four, eight, or twelve hours a week. One two, or three credits. Mr. Wheeler. 8-10, 10-12, or 2-4, M. T. W. T. F. Shop.

Includes laying out work, grinding tools, chipping, drilling, tapping, babbitting bearings and scrapping. Machine work, including centering, straight and taper turning, chicking, screw cutting, shaper work, planer work and index milling, and gear cutting. Text: Machine Tool Work by Turner.

SHOP AND DRAWING COURSES FOR INDUSTRIAL EDUCATION TEACHERS

M. E. s210. Mechanical Drawing for Teachers. Ten hours a week. Three credits. Mr. Briggs. 8-10 or 10-12 M. T. W. T. F. P. 106.

Intended for those teaching or preparing to teach mechanical drawing and shop practice. Consists of lectures and drawing-room practices involving problems for the junior and senior high school mechanical drawing. The elements of lettering, instrument practice, projections, intersections, developments, tracing, blue-printing, and methods of instruction will be considered. (For advanced work in drawing see Architectural and Mechanical Engineering.) Text: Engineering Drawing by French.

M. E. s250. Woodworking for Teachers. Ten hours a week. Three credits. Mr. Rowland. 2-4 M. T. W. T. F. Shops.

Stresses practical methods for teaching woodwork in general and in unit shops on the Industrial Arts basis. Problems considered are to be used chiefly for grades seven, eight, and nine, or older pupils when beginning. Deals primarily with hand tools, common woods, and elementary finishes. Text: Instructional Units in Hand Woodwork by Tustison and Brown.

M. E. s350. Woodworking for Teachers (Advanced). Ten hours a week. Three credits. Prerequisite or its equivalent and consent of the instructor. Mr. Rowland. By arrangement. Shops.

Emphasis is placed on educationally significant projects adapted to older students where the use and care of both hand and machine tools is an important factor. Opportunity for practice in grinding edged tools, filing and setting of saws, the maintenance of other tools, and the organization and management of tool rooms and supplies. Text: Principles of Woodworking by Hjorth.

ENGLISH

Eng. s101. Composition. Five hours a week. Three credits. Messrs. Shelley and Wynne. 8 M. T. W. T. F.; 11 M. T. W. T. F. Pu. 106; Pu. 107.

Illustrative readings and exercises in types of composition; long paper; collateral reading.

Eng. s202. Advanced English Grammar and Composition. Five hours a week. Three credits. Mr. Shelley. 10 M. T. W. T. F. Pu. 106.

For teachers of English in high schools and in the grades, and for journalists and other creative writers. The science of grammar and the art of its application.

Eng. s221. Survey of American Literature. Five hours a week. Three credits. Prerequisite: Eng. 101. Mr. Campbell. 8 M. T. W. T. F. Pu. 103.

Equivalent to the second term in the regular session; from 1840 to 1900.

A study of the masterpieces and outstanding types of American literature in their historical settings, together with a critical examination of the development of American literary thought in connection with its European background.

Eng. s226. Modern Drama. Five hours a week. Three credits. Prerequisite: Eng. 101. Mr. Shelley. 11 M. T. W. T. F. Pu. 106.

Modern plays, beginning with Ibsen; contemporary English and American productions.

Eng. s235. Victorian Poetry. Five hours a week. Three credits. Prerequisite: Eng. 101. Mr. Campbell. 12 M. T. W. T. F. Pu. 103.

Principal poets of the Victorian era; emphasis on Tennyson and Browning.

Eng. s320. The Short Story. Five hours a week. Three credits. Prerequisite: Eng. 101 and three additional credits in English. Mr. Wynne. 9 M. T. W. T. F. Pu. 107.

Development, structure, types, and style of the present-day short story; papers, collateral reading.

Eng. s332. The Romantic Period. Five hours a week. Three credits. Prerequisite: Eng. 101 and three additional credits in English. Mr. Campbell. 10 M. T. W. T. F. Pu. 103.

Representative poems of Gray, Blake, Burns, Wordsworth, Coleridge, Scott, Byron, Shelley, and Keats.

Eng. s337. Contemporary American Literature. Five hours a week. Three credits. Prerequisite: Eng. 101 and three additional credits in English. Mr. Wynne. 8 M. T. W. T. F. Pu. 107.

A study of leading writers of the present century, and an attempt to interpret their works against the social background of the period.

FIELD CROPS

F. C. s1. Cotton Classing. Twenty hours a week for six weeks. No college credit. Mr. Cotner. 9-1 M. T. W. T. F. Pt. 45.

The Summer School of Cotton Classing offers an intensive course in the grading and stapling of cotton.

The course will consist of lectures and daily practice in grading and stapling cotton samples according to the "Universal Cotton Standards."

The course will be given each day, with the exception of Saturday, for four hours a day.

The first period of each day will be devoted to lectures and discussions, and the remaining time will be used in the actual practice of grading and stapling cotton.

The Cotton Classing course is designed for a special group, and does not carry collegiate credit. There is a charge of $27.50 for the course in Cotton Classing plus a $1.00 infirmary fee. Persons registered for 50 per cent or less of the course will be charged $15.00. All fees are to be paid on or before registration.

A Cotton Classing certificate will be issued by the College to those satisfactorily completing the six weeks course.

The school has been serving the State and neighboring states for seventeen years. The school has international recognition, as men from the following countries have taken the course: South America, India, China, South Africa, Belgium, and Germany.

Persons expecting to attend this course should notify Dr. J. B. Cotner, State College Station, Raleigh, N. C.

F. C. s225. Cotton Classing II. Three or six credits. Mr. Cotner. 9-11 or 11-1.

Required of sophomores in Textile Manufacturing, Chemistry and Dyeing, and Designing.

A study of the universal standards of American upland cotton for grade and staple. Factors that determine grade and their relative value. Practice will consist of classing and stapling three to five thousand samples of cotton.

F. C. s325. Seed Certification Problems. Five hours a week. Three credits. ———— Prerequisite: F. C. 101. Arranged. Pt. 26.

A study of standards for quality in field crops for certification.

F. C. s351. Crop Research. Undergraduate credits, 3-9; Graduate credits, 2-6. Elective for graduates and advanced undergraduates. Mr. Cotner. By arrangement. Pt. 26.

F. C. s415. Plant Breeding Research. Three credits. Prerequisite: F. C. 345. By arrangement. Mr. Cotner.

Inheritance problems of the plants. Available during any season appropriate to the study of the particular crop.

GEOLOGY AND PHYSICAL GEOGRAPHY

Geol. s101. Earth History. Five hours a week. Three credits. Mr. Stuckey. 9 M. T. W. T. F. Pr.

Open to both college students and teachers who are interested in a better understanding of the world about them.

An introductory course in general geology dealing with the changes which have taken place in the earth and the physical and life processes which have brought about these changes. The first half of the course deals with the processes of physical and dynamical forces, while the second half deals with the historical development of the earth as it has been affected by those forces and by life processes.

Geol. s120. Physical Geology. Three lectures; four or six hours laboratory and field work. Three or four credits. Mr. Stuckey. 8 M. W. F. Laboratory by arrangement. Pr.

Physical Geology as related to forces acting on and in the earth, and materials in the earth's crust.

Geol. s291. Geology of North Carolina. Three lectures; four hours laboratory. Three credits. Mr. Stuckey. 12 M. W. F. Laboratory by arrangement. Pr. Elective. Prerequisite: Geol. 101, 120 or 201.

Also open to teachers who are interested in the geology of North Carolina and who may be interested in helping students to collect and assemble groups of the common rocks and minerals from different sections of the State.

The course will cover the physical geography, general geology, common rocks and minerals, and mine and quarry products of the State.

HISTORY

Hist. s101a. Economic History. Five hours a week. Three credits. Mr. Lockmiller. 8 M. T. W. T. F. Pe. 1.

A survey course dealing with the European background of American history; English colonization and government; and colonial agriculture, industry, finance, commerce, and social life. The economic background of the Revolution and the problems confronting the states during and after the War for Independence will also be considered.

Hist. s101b. Economic History. Five hours a week. Three credits. Mr. Lockmiller. 9 M. T. W. T. F. Pe. 1.

The economic aspects of the beginnings of the government under the Constitution; a consideration of the economic growth of the United States, 1790 to 1860 in the fields of commerce, industry, agriculture and finance with some attention to parallel developments in Europe and the affects of the Industrial Revolution; the struggle between the North and South, 1861-1865 in the light of its economic signficance.

Hist. s203. Medieval History. Five hours a week. Three credits. Mr. Barnhardt. 11 M. T. W. T. F. Pe. 5.

A survey of the political, social, economic, ecclesiastical, and cultural history of Europe from the fifth century to the close of the fifteenth century.

Hist. s206. Modern Governments. Five hours a week. Three credits. Mr. Barnhardt. 8 M. T. W. T. F. Pe. 5.

A comparative study of the governments of England, France, Germany, Italy, and Russia.

Hist. s303. History of North Carolina. Five hours a week. Three credits. Mr. Barnhardt. 9 M. T. W. T. F. Pe. 5. Prerequisite: Hist. 101 or equivalent.

The purpose of this course is to give the teachers of North Carolina and others a general view of the political, economic, and social development of North Carolina from colonial beginnings to the present day, with special emphasis on the nineteenth and twentieth centuries.

Hist. s310. American Biography. Five hours a week. Three credits. Mr. Lockmiller. 11 M. T. W. T. F. Pe. 1. Elective. Prerequisite: Hist. 101 or equivalent.

Representative men and women in American politics, law, religion, agriculture, industry, commerce, science, literature, and art.

Hist. s321. The Latin-American Republics. Five hours a week. Three credits. Mr. Lockmiller. 10 M. T. W. T. F. Pe. 1.

Social, economic, and political development of Latin America since 1810.

HORTICULTURE

Hort. s102. Plant Propagation and Nursery Practice. Three credits. Mr. Randall. 9 M. T. W. T., 2-4 M. W. Pk. 308.

Study of methods and practice in seedage, cuttage, separation and division, budding and grafting. Cultural principles and practices in growing nursery stock.

Hort. s228. Home Floriculture. Three credits. Mr. Randall. 11 M. T. W. Th., 2-4 T. Th. Pk. 308.

Principles and methods of growing garden flowers and house plants, including varieties and their adaptability.

MATHEMATICS

Math. s100a. Mathematical Analysis. Five hours a week. Three credits. Prerequisite: Algebra to quadratics and Plane Geometry. Mr. Lee. 11 M. T. W. T. F. Page 209. Text: Lee.

Review of elementary topics such as factoring, fractions, simple equations, exponents and radicals. Topics then taken up are: quadratic equations, solution of higher degree equations, simultaneous quadratic equations, logarithms, the binomial theorem, and the elementary theory of probability.

Math. s100b. Mathematical Analysis. Five hours a week. Three credits. Mr. Fisher. 12 M. T. W. T. F. Page 209. Text: Lee.

The study of trigonometric functions with their applications to the solution of the right and oblique triangles, with numerous problems. Also, a brief study of trigonometric equations and identities, and inverse functions.

Math. s100c. Mathematical Analysis. Five hours a week. Three credits. Mr. Clarkson. 9 M. T. W. T. F. Page 101B. Text: Lee.

Simple and compound interest, annuities, sinking funds, and amortization and valuation of bonds, and other applications.

Math. s101. Algebra. Twelve hours a week. Six credits. Mr. Thomas. 11-1 M. T. W. T. F. S. Page 203. Text: Fisher.

Progressions, binomial theorem, undetermined coefficients, logarithms, compound interest and annuities, permutations and computations, the general theory of equations, and the solution of higher equations.

Math. s102. Trigonometry. Twelve hours a week. Six credits. Mr. Lee. 8-10 M. T. W. T. F. S. Page 203. Text: Palmer and Leigh.

Definitions of trigonometric functions, derivations of formulae, solution of plane and spherical triangles, and the solution of many practical problems.

Math. s103. Analytical Geometry. Twelve hours. Six credits. Prerequisite: Mathematics 101 and 102. Mr. Nahikian. 11-1 M. T. W. T. F. Page 101A. Text: Love.

Loci of equations, the straight line, circle, parabola, ellipse, hyperbola, and the general equation of the second degree.

Math. s201. Differential Calculus. Eight hours a week. Four credits. Prerequisite: Mathematics 103. Mr. Levine. 11-1 M. T. W. T. F. Page 101B. Text: Granville, Smith, and Longley.

An elementary course on the fundamental principles of the calculus, including the development of the formulae for differentiation with their application to the problems in rates, maxima and minima, etc.

Math. s202. Integral Calculus I. Eight hours a week. Four credits. Prerequisite: Mathematics 201. Mr. Clarkson. 11-1 M. T. W. T. F. Page 101B. Text: Granville, Smith, and Longley.

Methods of integration, the study of the definite integral, with applications to problems in areas, volumes, surfaces, and lengths of arcs.

Math. s203. Integral Calculus II. Eight hours a week. Four credits. Prerequisite: Mathematics 202. Mr. Fisher. 8-10 M. T. W. T. F. Page 209. Text: Granville, Smith, and Longley.

Centroids, radii of gyration and moments of inertia, problems in work and liquid pressure, double and triple integrals, infinite series, hyperbolic functions, and differential equations.

Math. s301. Differential Equations. Five hours a week. Three credits. Prerequisite: Math. 203. Mr. Levine. 8 M. T. W. T. F. Page 203. Text: Phillips.

A short course to include the solutions of equations which occur in scientific work and engineering problems.

MODERN LANGUAGES

German

M. L. 102. Elementary German. Five hours a week. Three credits. Mr. Ballenger. 11 M. T. W. T. F. Pe. 211.

This course consists of a series of lectures on the structure and technique of the German language, supplemented by a series of easy readings and translations. Since the work is conducted in such manner that the student's choice of the reading material is an individual matter, it may be taken as an initial or a review course. Daily reports and conferences are required. Students doing a translation project in this course will register for such project in M. L. s204.

M. L. s204. Scientific German (Intermediate). Five or ten hours a week. Three or six credits. Mr. Hinkle. 10 M. T. W. T. F. Pe. 212. Prerequisite: M. L. 205 or equivalent.

This course consists of a series of readings and translations of relatively simple scientific German, supplemented by lectures on scientific terminology, word order, vocabulary analysis and other matters of linguistic technique. The work is designed to meet the needs of students whose interest in the language is primarily that of the acquisition of a reading ability. Since the choice of reading material is adjusted to individual needs, it may be taken by students of varying degrees of previous linguistic training. Daily reports and conferences are required. Students doing a translation project with this course will register for such project in M. L. s102.

French

M. L. s101. Elementary French. Five hours a week. Three credits. Mr. Ballenger. 8 M. T. W. T. F. Pe. 211.

This course consists of a series of lectures on the structure, diction, pronunciation, and other matters of technique of the French language, supplemented by easy readings and translations. Since the work is conducted in such manner that the student's choice of reading material is an individual matter, it may be taken as an initial or a review course. Daily reports and conferences are required. Students doing a translation project with this course will register for such project in M. L. s212.

M. L. s212. Scientific French (Intermediate). Five or ten hours a week. Three or six credits. Mr. Hinkle. 9 M. T. W. T. F. Pe. 212. Prerequisite: M. L. 201 or equivalent.

This course consists of a series of readings and translations of relatively simple scientific French, supplemented by lectures on scientific terminology, vocabulary analysis, and other matters of linguistic technique. The work is designed to meet the needs of students whose interest in the language is primarily that of the acquisition of a reading ability. Since the choice of reading material is adjusted to individual needs, it may be taken by students of varying degrees of previous linguistic training.

Daily reports and conferences are required. Students doing a translation project with this course will register for such project in M. L. s101.

Spanish

M. L. s103. Elementary Spanish. Five hours a week. Three credits. Mr. Hinkle or Mr. Ballenger. 12 M. T. W. T. F. Pe. 211-212.

This course consists of a series of lectures on the structure, diction, pronunciation, and other matters of technique of the Spanish language, supplemented by easy readiugs and translations. Since the work is conducted in such manner that the student's choice of reading material is an individual matter, it may be taken as an initial or a review course. Daily reports and conferences are required. Students doing a translation project with this course will register for such project in another course.

General Courses

M. L. s317. Masterpieces of Foreign Literature. Five hours a week. Three credits. Mr. Hinkle. 11 M. T. W. T. F. Pe. 212. Prerequisite: M. L. 316 or equivalent.

This course consists of a study of outstanding literary productions in each of the various types of literature, with lectures on the cultural background out of which they have developed. It is designed primarily to meet the needs of teachers and advanced students who wish to supplement their knowledge of their own literature with a survey of similar contributions in the literature of other civilizations. Special attention is given to the literary monuments of France, Germany, Spain and Italy. Since the material studied is done in translation, no foreign language prerequisites are necessary. Daily reports and conferences are required.

Translation Projects

In connection with the Translation Service of the Modern Language Department an opportunity is given graduate and advanced under-graduate students in the summer session to do a translation project as a means of preparation for a reading knowledge examination in one of the above mentioned languages. Since these translation projects must be done in connection with class work, they are restricted to registrants in the above courses. Students doing such projects are required to register for the same, this registration having the value of a three-credit course, and being in addition to at least one other language course.

PHYSICAL EDUCATION

P. E. s101. Fundamental Activities. Four hours practice. One credit. Mr. Miller. By arrangement. Gym.

Freshman requirement. Individual health and physical efficiency of each student, based on standard athletic, gymnastic, and efficiency tests.

P. E. s102. Sports Activities. Four hours practice. One credit. Mr. Miller. By arrangement. Gym.

Sophomore requirement. Election permitted in the popular sports for healthful exercise and a fair degree of skill in them.

P. E. s114. Football—Theory and Practice. Five hours a week, three hours practice. Three credits. Mr. Miller. By arrangement. Gym.

This course will cover the organization of the theory and practice of football coaching.

P. E. s115. **Basketball—Theory and Practice.** Five hours theory, three hours practice. Three credits. Mr. Miller. By arrangement. Gym.

This course will cover the organization of the theory and practice of basketball coaching.

PHYSICS

Physics s103. Physics for Textile Students. Four or eight credits. Five hours class work, two two-hour laboratory periods each week for four credits. Double this for eight credits. Mr. Dixon or Mr. Lancaster. 9 M. T. W. T. F.; 2-4 M. W.; 9-11 M. T. W. T. F.; 2-4 M. T. W. T. P & E 209. Prerequisite: Math. 100.

Industrial Physics, with emphasis on practical applications to the textile industry.

Physics s104. Physics for Engineers. Four or eight credits. Mr. Heck or Mr. Dixon. 8 M. T. W. T. F.; 2-4 M. W.; 8-10 M. T. W. T. F.; 2-4 M. W. P & E 212.

An advanced treatment of General Physics. First-, second- or third-term work may be taken or any two terms taken simultaneously.

Physics s107. Descriptive Astronomy. Five hours a week. Three credits. Mr. Heck. 12 M. T. W. T. F. P & E 212.

A descriptive course covering the most interesting elements in the study of the sun and planets and the stars. The modern interpretation of the universe as a whole given in this course makes it valuable as a background to a student or teacher of any subject. Observation periods, using the telescope on top of the physics building, will be substituted at times for class lectures.

Physics s205. Light in Industry. Three hours credit. Mr. Lancaster. 11 M. T. W. T. F. P & E 209.

Fundamentals of light, illumination, and color, with the principles applied to the selection, mixing, harmony, matching, lighting, photography, and pigments.

***Physics s212. Photography.** Four hours class work and two laboratory periods each week. Three credits. Mr. Meares. 7 M. T. W. T. Laboratory by arrangement.

A general course in photography covering cameras and lenses, principles of exposure, development and printing; lantern slides, projection printing, and color photography.

Physics s411. Research.

Graduate courses in physics will be given if there is sufficient demand.

POULTRY SCIENCE

Poul. s305. Poultry Diseases. Three credits. Mr. Gauger or Mr. Dearstyne. By arrangement. R. 208.

Common diseases of poultry as found in North Carolina; seasonal anticipation of diseases; autopsy methods and practice; poultry sanitation.

Poul. s310. Advanced Poultry Production. Three credits. Mr. Dearstyne or Mr. Williams. By arrangement.

Course especially adaptable to vocational teachers in agriculture. Includes poultry judging, nutrition, and commercial plant management.

Poul. s407. Poultry Research. Three credits. Staff. By arrangement. R. 208.

Problems in poultry nutrition, diseases, marketing, and breeding may be undertaken. Such problems shall be conducted on a definitely outlined basis acceptable to the department and the results shall be summarized in the form of an acceptable basis.

PSYCHOLOGY

Psychol. s101. Introduction to Phychology. Five hours a week. Three credits. Mr. Garrison. 9 M. T. W. T. F. H. 5.

A study of the structure, function, and laws of human behavior, with application of psychology to everyday life.

Psychol. s203a. Educational Psychology. Five hours a week. Three credits. Required of students in Education; elective for others. Mr. Garrison. 11 M. T. W. T. F. H. 3.

(For a description of course, see Ed. 203a.)

Psychol. s203b. Educational Psychology. Five hours a week. Three credits. Required of students in Education; elective for others. Mr. Garrison. 10 M. T. W. T. F. H. 5.

(For a description of course, see Ed. 203b.)

Psychol. s376. Psychology of Adolescence. Five hours a week. Three credits. Mr. Garrison. Prerequisite Ed. 203 and six credits in education. 12 M. T. W. T. F. H. 5.

(For a description of course, see Ed. 376.)

RELIGION

Rel. s103. Social Ethics. Five hours a week. Three credits. Mr. Hicks. 10 M. T. W. T. F. Pe. 204.

Historical and psychological study of moral nature and moral progress; origin and development of the social conscience; and changing ethics in certain aspects of social life.

Rel. s201. Comparative Religion. Five hours a week. Three credits. Mr. Hicks. 9 M. T. W. T. F. Pe. 204.

History, general characteristics, and social significance of the great ethnic religions of the world, characteristics of the living religions.

SOCIOLOGY

Soc. s102. Introductory Sociology. Five hours a week. Three credits. Mr. Hicks. 11 M. T. W. T. F. Pe. 204.

This course offers an inductive introduction to the field of sociology by taking up a number of social problems which confront every community. The outstanding problems to be considered are: poverty, crime, divorce, immigration, population, and race problems. This course, therefore, is a natural introduction to the sociology courses which deal more directly with social theory.

Soc. 300. Criminology. Five hours a week. Three credits. Prerequisite: Soc. 102 or 103. Mr. Winston. 9 M. T. W. T. F. Pe. 207.

This course will take up the causes and conditions leading to crime and study the methods of handling criminals. It will discuss the influence of various factors in producing criminal behavior, emphasis being placed on prevention rather than cure.

Soc. s302. Sociology of City Life. Five hours a week. Three credits. Prerequisite: Soc. 102 or 103. Mr. Winston. 10 M. T. W. T. F. Pe. 207.

Problems arising from growth of modern town and city life; city planning in regard to social and industrial progress.

Soc. s306. The American Family. Five hours a week. Three credits. Prequisite: Soc. 102 or 103. Mr. Winston. 8 M. T. W. T. F. Pe. 207.

A study of family relationships, of the relationship between husband and wife, parents and children, with particular emphasis on the development of personality. The effect of present-day social changes upon the family, and the changes in family life as a result will be studied. Discussion of various efforts to stabilize the family. The part habits play in successful and non-successful marriages will also be discussed.

SOILS

Soils s115. Soils. Five recitations and lectures, four hours laboratory. Four credits. Mr. Clevenger. Prerequisite: Geol. 120 and Chem. 101, 3, 5. 9 M. T. W. T. F. Laboratory arranged. Pt. 16.

A study of the properties of soils and their relation to soil management.

Soils s265. Soil Fertility. Four hours of class, one laboratory period a week. Three credits. Mr. Clevenger. 11 M. T. W. T. Laboratory to be arranged. Pt. 16.

A course dealing with the chemical and biological properties of soils as related to soil fertility.

Soils s310. Fertilizers. Four hours of class and one laboratory period a week. Three credits. Mr. Clevenger. 10 M. T. W. T. Laboratory to be arranged. Pt. 16.

A study of the sources, characteristics, and utilization of fertilizers.

Soils s430. Soil Research. Two to five credits. Mr. Clevenger and Mr. Lutz. By arrangement.

Soils s315. The Soils of North Carolina. Four hours of class and a laboratory period consisting of field trips. Three credits. Mr. Lutz. 8 M. T. W. T. Pt. 16.

The origin, characteristics, plant adaptation, and fertilizer needs of North Carolina soil types.

TEXTILES

The Textile School at State College occupies a place of merited leadership in this country. A state with North Carolina's rank in the textile field needs to take advantage of the latest developments in research and

training in this, North Carolina's largest industry. The Textile School offers its equipment and faculty to the people of the State during the Summer School.

Courses in textiles designed for men who are employed in the manufacturing plants, as well as courses for teachers who are employed in the textile communities, will be given. These courses will be arranged on a unit basis in order to meet the needs of the various groups who may wish to come to the College for different periods.

If there is sufficient demand, a second summer session of textile courses will be offered from July 26 to September 3. Students interested in attending this special session should communicate with Dean Thomas Nelson of the Textile School as early as possible, but not later than July 10. The courses given will depend upon the requests received.

Tex. s101. Textile Principles Laboratory. One, two or three credits. Mr. Peeler. By arrangement. Textile Building.

Operation of plain and automatic looms and carding and spinning machines.

Tex. s102. Yarn Manufacture 1. Five hours a week. Three credits. Mr. Hilton. 9 M. T. W. T. F. Textile Building.

Mixing of cotton, description and setting of openers, pickers, and cards. Production, speed, and draft calculations.

Tex. s103. Yarn Manufacture Laboratory I. One or two credits. Mr. Hilton. By arrangement. Textile Building.

Operation and fixing of machines. Grinding and setting cards.

Tex. s104. Knitting I. Four hours a week. Two credits. Mr. Lewis. 12 M. T. W. T. Textile Building.

Selection and preparation of knitting yarns, knitting mechanisms, plain and rib knitting machines, circular ribbers, and circular automatic machines.

Tex. s105. Knitting Laboratory I. One, two, or three credits. Mr. Lewis. By arrangement. Textile Building.

Operation of machines, practical experiments, hosiery analysis, topping, transferring, and looping.

Tex. s106. Fabric Structure and Analysis. Eight or sixteen hours a week. Two or four credits. Mr. Lewis. By arrangement. Textile Building.

Systems of numbering woolen, worsted, silk, linen, rayon, and cotton yarn. Plain, twill, and sateen weaves. Ornamentation of plain weaves; wave designs; pointed twills; diamond effects; plain and fancy basket weaves; warp and filling rib weaves.

Analyzing plain, twill, sateen, and other fabrics made from simple weaves, ascertaining the number of ends and picks per inch in sample. Fabric analysis calculations.

Tex. s108. Power Weaving Laboratory. One or two credits. Mr. Peeler. By arrangement. Textile Building.

Operating and fixing of plain, automatic, and drop-box looms. Pattern chain building for drop-box looms.

Tex. s115. Textile Principles. Five hours a week. Three credits. Mr. Peeler. 10 M. T. W. T. F. Textile Building.

Principles of manufacture involved in the textile industry. Elementary calculations for yarns and fabrics; harness and reed calculations; loom production calculations.

Tex. s201. Yarn Manufacture II. Five hours a week. Three credits. Mr. Hilton. 10 M. T. W. T. F. Textile Building.

Construction of draw frames; sliver lapper; ribbon lapper, comber; mechanical and electrical stop motions, description and setting of the different parts; weighting of rolls; types of roll covering; care of machines; fly frame builder and differential motions.

Tex. s202. Yarn Manufacture Laboratory II. One, two, or three credits. Mr. Hilton. By arrangement. Textile Building.

Operation and fixing of draw frames; sliver lappers; ribbon lapper; comber and fly frames. Changing of hank roving and the setting of rolls and speeder motions.

Tex. s205. Fabric Design and Analysis I. Ten or twenty hours. Three or six credits. Mr. Hart. 11 M. T. W. T. F.; 2-5 M. T. W. T. F. Textile Building.

Construction of fancy weaves, such as broken twills, curved twills, entwining twills, granite weaves. Imitation leno; honeycomb weaves; fabrics backed with warp or filling; fabrics ornamented with extra warp or filling; combining weaves together to produce new patterns.

Analyzing samples of fancy fabrics for design; drawing in draft, reed, and chain plan. Calculating particulars to reproduce fabric from data obtained from sample.

Tex. s208-209. Dobby Weaving Laboratory I or II. One, two, three, or six credits. Mr. Hart. By arrangement. Textile Building.

Preparation of warps for weaving cotton and rayon fabrics on dobby looms; starting up warps in looms; fixing single and double index dobbies; pattern chain building; operation of dobby looms.

Tex. s301. Yarn Manufacture IV. Five hours a week. Three credits. Mr. Hilton. 8 M. T. W. T. F. Textile Building.

Spinning; spooling; twisting. Description and setting of different parts. Builder of motions for warp and filling. Bobbin holders, thread guides, traverse motions. Ply yarns. Calculations for twist, speed, and production.

Tex. s311. Fabric Anaylsis. Six or twelve hours. Two or four credits. Mr. Shinn. By arrangement. Textile Building.

Analyzing samples of cotton, wool, worsted, linen, rayon, and silk fabrics for size of yarns, ends and picks per inch, weight of warp and filling, so as to accurately reproduce samples analyzed. Obtaining design, drawing in draft, chain, and reed plan for fancy fabrics, such as stripes, checks, extra warp and extra filling figures, leno fabrics, jacquard fabrics, draperies.

Tex. s313-314. Cotton and Rayon Weaving Laboratory I or II. One, two, three or six credits. Mr. Hart. By arrangement. Textile Building.

Operation and fixing of dobby, pick and pick, and jacquard looms. Preparation of warps to weave rayon and fine cotton fabrics. Building of box, dobby, and multiplier chains.

Tex. s320. Leno Design. Five hours a week. Three credits. Mr. Shinn. 11 M. T. W. T. F. Textile building. Prerequisite: Fabric Design and Analysis, Tex. 205.

Leno weaves with one, two or more sets of doups. Combinations of plain and fancy weaves with leno. Methods of obtaining leno patterns. Methods of making original designs for dress goods, draperies.

Tex. s321. Dobby Design. Five hours a week. Three credits. Mr. Shinn. 9. M. T. W. T. F. Prerequisite: Fabric Design and Analysis, Tex. 205. Textile Building.

Designing fabrics, such as fancy crepes, figured double plain, matelasse, velvets, corduroys, pique, lines of samples.

ZOOLOGY

Zool. s101. General Zoology. Five recitations, four hours laboratory. Four credits. Mr. McCutcheon. 9 M. T. W. T. F. Laboratory arranged. Z. 7.

A study of the structures and function of the vetebrates, with special reference to man and the rat.

Zool. s102. Economic Zoology. Five recitations, four hours laboratory. Four credits. Mr. McCutcheon. 8 M. T. W. T. F. Laboratory arranged. Z. 8.

An elementary study of animals with special reference to the more important economic groups; designed to give the student a general knowledge of the animal kingdom.

Zool. s304. Genetics. Four credits. Mr. Bostian. By arrangement. Prerequisite: Bot. 101 and 102 or Zool. 101.

Basic principles of heredity and variation. Students carry on and analyze breeding experiments, analyze inheritance in various animals and plants.

Courses for Graduates Only

Zool. s403. Research in Zoology. Three credits. Mr. Metcalf, Mr. Mitchell, Mr. Bostian. By arrangement. Prerequisite: Eighteen term credits in Zoology.

The student will be assigned a problem in development morphology, ecology, physiology, genetics, or taxonomy.

THE UNIVERSITY OF NORTH CAROLINA

CHAPEL HILL, N. C.

1938 SUMMER SESSION

First Term: June 13-July 23.
Second Term: July 25-August 31.

The 1938 Summer Session of the University of North Carolina at Chapel Hill offers undergraduate and graduate courses in Archæology, Art, Astronomy, Botany, Chemistry, Dramatic Art, Economics and Commerce, Education, English, Geology, German, Greek, History, Latin, Law, Library Science, Mathematics, Music, Pharmacy, Physical Education, Physics, Political Science, Psychology, Public Welfare, Romance Languages, Rural Social Economics, Sociology, and Zoology.

Special consideration is to be given during the summer of 1938 to appropriate courses for Superintendents, High School Principals, Elementary Principals, Supervisors, Educational Counselors, and Elementary and Secondary Teachers.

Numerous courses, conferences, seminars, and institutes in the fields of the Social Sciences, Public Welfare, Political Science, Music, Dramatic Art, and Education and Public Relations will be held during the Summer Session.

EXPENSES

(For each term of six weeks)

LIVING ACCOMMODATIONS

Room Rent in University Residence Halls (other than Spencer Hall or the Graduate Clubs)	$ 7.50
Board in University Dining Hall Cafeteria (Estimated at $5.00 a week.)	30.00

OTHER EXPENSES

Registration fee for each student	15.00
Course fee for each quarter hour credit per term	2.25

For further information write:

R. B. HOUSE,
Dean of Administration,
Chapel Hill, N. C.

STATE COLLEGE RECORD

VOL. 38. FEBRUARY, 1939 No. 5

SUMMER SESSION

June 12—July 21, 1939

ANNOUNCEMENT OF COURSES

NORTH CAROLINA STATE COLLEGE
OF
AGRICULTURE AND ENGINEERING
OF THE
UNIVERSITY OF NORTH CAROLINA
STATE COLLEGE STATION
RALEIGH

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GEORGE KELLOGG SLOCUM, B.S., M.S. — *Forestry*
Assistant Professor of Forestry

GEORGE WALLACE SMITH, B.S., M.S., D.Sc. — *Civil Engineering*
Associate Professor of Engineering Mechanics

J. WARREN SMITH, B.S., M.A. — *Education*
Associate Professor of Industrial Education

BLAKE RAGSDALE VAN LEER, B.S., M.S., M.E. — *Engineering*
Dean of the Engineering School

FRED BARNETT WHEELER, B.E., M.E. — *Mechanical Engineering*
Associate Professor of Furniture Manufacturing and Superintendent of Shops

ARTHUR JOHN WILSON, B.S., M.S., Ph.D. — *Chemistry*
Professor of Analytical Chemistry

SANFORD RICHARD WINSTON, B.A., Ph.D. — *Sociology*
Professor of Sociology

SUMMER SESSION, 1939

The twenty-sixth Summer Session of the North Carolina State College of Agriculture and Engineering of the University of North Carolina begins Monday, June 12th, and closes Friday, July 21st.

COLLEGE CREDIT

Beginning with 1924-1925, the regular session of the State College was divided into three terms; consequently "credit," as used throughout this bulletin, refers to term credit, or twelve weeks' work, unless otherwise designated. Therefore, in order for the college-credit courses to count for a full term's work, they will be given, if for five credits, ten periods a week; if for three credits, five periods a week. Since, however, no student will be allowed to take more than eighteen hours of work per week without special permission, this restriction will prevent students taking more than one ten-period course.

It is important to notice that teachers are required to take at least fifteen hours weekly in order to receive credit for one summer session. Additional credits may be taken by students if they have points to justify, and by teachers upon approval. In no case will a student be allowed more than twelve credits of work.

AUDITORS

Students not carrying a full load, and others who receive permission, may audit classes by paying a $5.00 fee for each class attended. This does not permit the individual to receive credit for the course, and he is not permitted to take part in class discussions or receive any individual assistance from the teacher.

ADMISSION OF WOMEN

A recent ruling of the Board of Trustees allows this institution to accept women students for the summer session on the same basis as men. During the regular session, however, women students must present a minimum of forty-eight semester hours of advanced standing for admission, and be enrolled in one of the regular curricula.

DEGREES IN EDUCATION

No degrees in Education can be awarded by this institution, except in Agricultural Education, Vocational Education, and Industrial Arts Education.

TEACHING CERTIFICATES

We have received the following information from the Division of Certification of the State Department of Public Instruction which will be of interest to all teachers attending summer school to raise their certificates:

The State Department of Public Instruction is anxious to administer in a most effective way all certificate problems growing out of summer school attendance. The enterprise, however, is a coöperative one, involving the individual teacher, the institution conducting the summer school, and the State Department of Public Instruction. Looking toward a most satisfactory administration of these problems, the following general observations are made:

1. All teachers should fill out the back of the summer school card, giving the exact name which the certificate carries, the kind of cer-

tificate held, the serial number, et cetera. A teacher's registration should not be considered complete without this information.

2. Teachers who are expecting a change in their certificate for 1939-40 as a result of their summer school work, should wait for four weeks before making any inquiry of the State Department of Public Instruction. Last year about 11,000 summer school records were handled. It should be reasonable to assume a month's time would be required for handling these records and issuing the certificates growing therefrom.
3. Teachers who are expecting their certificates to be raised as a result of summer schol attendance should not send their old certificates to the State Department of Public Instruction. This is not necessary for the issuance of the new certificate.
4. Teachers should not send to the State Department of Public Instruction their personal reports of summer school work. The report must come direct from the institution, and will be sent by the institution if the teacher has properly registered.
5. Institutions should send the reports to the State Department of Public Instruction as promptly as possible after the close of the summer school. At present there is considerable variation among the institutions in their practice with reference to this point.

FEES AND EXPENSES FOR SIX-WEEKS PERIOD

All fees and other charges are payable in advance or upon registration, and all checks should be payable to North Carolina State College.

Room Rent (per person)	$ 7.50
Board at College Cafeteria (estimate)	30.00

College Fees

Registration Fee	$ 3.00
Course Fee (for each quarter hour of credit)	3.00
Medical Fee	1.00
Laboratory Fee for students taking surveying	2.00

All students occupying a room alone will be charged $10.00.

There will be a key deposit of twenty-five cents, which amount will be refunded when the key is returned.

There will be a late registration fee of $2.50 for all students who do not complete their registration on Monday, June 13th.

BOARD

The College maintains an excellent cafeteria where charges are reasonable. Students can purchase meal tickets at a reduced rate, so that board for the six-weeks period will be approximately $30.00.

ROOMS

Students will be assigned to rooms upon their arrival at the College. In case it is desired to change the room assignments, permission to do so must first be obtained from the Superintendent of Buildings. In no case may a room be taken until it has been regularly assigned.

The College rooms are supplied with necessary furniture. Each student, however, should bring towels, sheets, one pillow and two pillowcases, and two bedspreads for a single bed.

REGISTRATION

All registrations will be conducted in Frank Thompson Gymnasium beginning at 9 a.m. on June 12th. Students are expected to report in person on Monday, June 12th, so that they may begin class work on the morn-

ing of Tuesday, June 13th, at 8 o'clock. Deans and Directors of Instruction will be present to advise students relative to courses. The administration reserves the right to cancel any course for which the registration is less than eight. The final date for completing registration is 5:00 p.m. Wednesday, June 14th.

DIPLOMAS

Students expecting to receive a degree at the end of the summer session should come to the Office of Registration early in the session, to be sure they are meeting all the requirements for graduation. Degrees will not be awarded until the candidates have been approved by the college faculty at their September meeting, and diplomas will be mailed to students as soon thereafter as possible.

LIBRARY FACILITIES

In addition to the resources of the D. H. Hill Library, the facilities of the Olivia Raney Library and the State Library will be available to Summer School students for reference work.

SOCIAL AND RECREATIONAL FACILITIES

A reception for students and faculty, followed by other social and recreational events, serve to foster a congenial spirit in the student body. Weekly assembly periods with varied and interesting programs; voluntary student musical organizations; a weekly open forum for the discussion of timely subjects; the social center at the Y. M. C. A.; weekly dances; and supervised recreation, consisting of swimming, tennis, baseball, volleyball, basketball, and handball, provide a wide range of recreational activities.

Being the capital of one of the original thirteen states, Raleigh is unusually rich in historical collections, fine public buildings, and interesting places and memorials. It is interesting, also, for its churches, its schools, its hotels, its office buildings, and its growing commercial and industrial activities. Opportunities will be given the students to visit the places of interest.

The various churches welcome all Summer School students to Sunday school and church services, and their pastors have taken a very friendly interest in the morning services at the College auditorium. Raleigh will be found in all respects a delightful place of residence.

SPECIAL SHORT COURSES

During the summer the College offers several short courses. These courses are designed to be of practical value to people already employed in particular fields of work.

The total cost of any of these short courses, including cost of registration and room rent, will not exceed $3.00. Board is not furnished, but can be secured at the College Cafeteria.

For the summer of 1939 the North Carolina State College is offering the following short courses. Others will be offered in future summer schools whenever there are sufficient demands. These courses do not give college credit.

Short Course for Janitors and Firemen

The Mechanical Engineering Department of North Carolina State College, coöperating with the State School Commission, conducts a short course of five days for white janitors and firemen, teaching the fundamental principles of combustion, how to fire economically, and giving

general instructions about heating systems and operation of the plant. The mornings are given to lectures and talks by members of the College faculty and representatives from other State departments, and the afternoons are given over to the practical problems and to inspection trips to different schools. Applications for admission should be sent to Mr. H. E. Kendall, State School Commission, Raleigh, North Carolina. Dates will be announced later.

Short Course for Waterworks Operators

The Chemical Engineering Department of the North Carolina State College conducts a four-day short course for waterworks operators. The chemical background of water treatment will be presented simply, definitely, and comprehensively, with the purpose of making clear to waterworks men the nature of the chemicals used and their reactions, the principles involved in the chemical treatment of water for municipal and for industrial use, and an explanation of the control processes. Each individual will be provided with a short lithoprinted book of complete lessons studied, every lesson accompanied by experimental demonstrations to make the study concrete and practical. The course is so designed to present in a clear, practical way the fundamental principles of chemical treatment of water so as to give a measure of understanding and assurance in the minds of waterworks men in their waterworks practice. Classes will be held from 8 a.m. to 1 p.m. and from 2 p.m. to 4:30 p.m. Application for admission should be sent to Professor E. E. Randolph, North Carolina State College, Raleigh, North Carolina. Dates will be announced later.

Short Course for Gas Plant Engineers and Operators

The Chemical Engineering Department of the North Carolina State College conducts a three-day short course for gas plant engineers and operators. The course will include a comprehensive study of the fundamental principles of the manufacture of municipal and of industrial gas, the chemical reactions and principles involved, engineering problems, and control methods, together with clear, simple, and practical study of chemical nature of commercial gases, and of associated products; maintenance of uniform quality of product, prevention of losses and operation difficulties, and the chemical background of the various phases of gas production. The course is intended to be of definite help to operating men in gasworks. The class work will be fully illustrated with practical experiments. Classes will be held from 8 a.m. to 1 p.m. and from 2 p.m. to 4:30 p.m. Application for admission should be sent to Professor E. E. Randolph, North Carolina State College, Raleigh, North Carolina. Dates will be announced later.

COLLEGE PREPARATORY MATHEMATICS AND ENGLISH

There are a large number of students applying for admission who are deficient in the mathematics requirement for college entrance. This is particularly true of those students who desire to take engineering.

Tests conducted at this College for several years show conclusively that students poorly prepared in English have difficulty with all their major college studies. The College Preparatory Course in English will improve the student in the three most important aspects of English: reading, writing, and speaking.

Solid geometry is an entrance requirement for all engineering freshmen. It may be taken as an extra load during the second term of the freshman year . However, securing this training during the summer will be of great assistance to the student in his freshman year.

The cost of this instruction is very reasonable. The estimate of expenses for the six weeks is as follows:

1. Room rent _____$ 7.50
2. Board in college cafeteria (estimate) _____ 30.00
3. Registration fee _____ 3.00

To these items should be added the tuition charge for the courses as listed in the description of courses given below:

Eng. s50. College Preparatory English. Five hours a week. No college credit. Staff. 8 M. T. W. T. F. Pu. 108. Tuition, $9.00.

A course in the fundamentals of reading, writing, and speaking. Special emphasis will be given to the needs of the individual students; conferences will be held for the purpose of directing the activities of the course.

Math. s2. Solid Geometry. Five hours a week. No college credit. Staff. 10 M. T. W. T. F. P. 100. Tuition, $9.00.

Selected theorems and exercises, emphasizing particularly the practical aspects of the subject, such as the volumes and surfaces of prisms, pyramids, cylinders, cones, the frustums of pyramids and cones, and the sphere.

SUMMER INSTRUCTION IN FORESTRY

June 6 to August 12

The regular summer instructions in forestry for sophomores from June 6 to August 12 will be divided as follows:

Surveying—June 26 through July 15.
Dendrology—June 6 through June 17; and July 17 through July 22.
Mensuration—July 31 through August 12.
Silviculture—June 19 through June 24; and July 4 through July 29.

The expenses for the entire period will be as follows:

Registration fee _____$ 5.00
For each credit scheduled _____ 3.00
Room and board, based on last year's expenses (estimated) _____ 50.00
Bus fee _____ 22.00

The courses listed below are required and carry the regular college credit as indicated. The work is carried on entirely in the field and the class is responsible for its own program of camp routine. The students furnish their own board and any facilities other than the beds and housing. The registration in these courses is restricted to regularly enrolled students, unless a student is admitted as a special student under the same conditions that a special student would be allowed to take work in the regular courses.

Civil Engineering s101. Surveying and Mapping. 3 Credits. Mr. Fontaine and Mr. Bramer.

Includes Boundary Surveys; Topographical Surveys and calculations of sections of the school forest areas. A complete topographic map including all field data is required.

For. s200. Mensuration. 3 Credits. Mr. Slocum and Mr. Miller.

The summer course in mensuration consists of two weeks field work. The work is carried on at the Hill Forest Camp or on the White Oak Pocosin. Practical work in timber cruising, stem analysis, mill studies, log scaling and collection of data for yield, volume and stand tables is carried out.

For. s203. Silviculture. 3 Credits. Mr. Miller and Mr. Slocum.

Classification of forest types. Reproduction studies. Establishment and measurement of sample plots. Correlation of depth of water table with site quality. This work is carried on at the White Oak Forest in the coastal section of North Carolina.

For. s211. Dendrology. 3 Credits. Mr. Slocum and Mr. Miller.

North Carolina is well suited for the study of dendrology. Representative trees of eastern United States are found here, scattered throughout the State. The summer course in dendrology consists of three weeks field work, one week being spent in each of the sections of the State, namely, the Mountains, Piedmont, and Coastal Plain.

SPECIAL THREE WEEKS COURSES FOR TEACHERS OF VOCATIONAL AGRICULTURE

June 12 to June 30

The State College Summer Session will again offer special three weeks courses for teachers of vocational agriculture from June 12 to June 30. Courses will be offered in both subject matter and professional fields, and an effort will be made to arrange the work to meet the most urgent needs of teachers. A special announcement of these courses will be issued soon.

The expenses for each three weeks term will be as follows:

Registration fee	$ 1.50
For each term credit scheduled	3.00
Room rent (each student—two in a room)	4.00
Board (estimate of cafeteria cost)	15.00
Infirmary fee	.50

Unit Courses for CCC Camp Advisers

June 12-24, 1939

A two weeks session especially for Educational Advisers of the Civilian Conservation Corps. The plan is to conduct such classes as will meet the needs of individual advisers and to hold conferences and discussions of the general phases of the work to be undertaken in the camps. There will be opportunities for instruction in methods of procedure, and vocational guidance.

There will be a charge of $2.50 for room rent, $10.00 for registration fee, and a small sum for actual cost of materials used. Meals may be procured at the college cafeteria or elsewhere. See page 10 for instruction as to what is needed in room.

COURSES TO BE OFFERED IN THE SUMMER SESSION

ABBREVIATIONS FOR BUILDINGS

C.—Ceramic
C.E.—Civil Engineering
D.—Daniels Hall
G.—Gymnasium
H.—Holladay Hall
P.—Page Hall
Pe.—Peele Hall
Pk.—Polk Hall
Pr.—Primrose Hall
Pt.—Patterson Hall
R.—Ricks Hall
T.—Textile
Pu.—Pullen Hall
W.—Winston Hall
Z.—Zoology

AGRICULTURAL ECONOMICS

Agr. Econ. s260. Agricultural Economics. Five hours a week. Three credits. Mr. Forster. 10 M. T. W. T. F. R. 207. Prerequisite: Econ. 102 or 103.

A study of the economics of agricultural production; marketing of farm products; farm credit; land tenure and other major economic problems of the farmer.

Agr. Econ. s362. Farm Management. Five hours a week. Three credits. Mr. Forster. 12 M. T. W. T. F.

In this course the problems of farm management will be studied from the practical or realistic point of view. Among the more important problems which will be studied are: the selection and combination of farm enterprises, the relation of the size of the farm to profits, factors involved in the selection of farm, farm implements and machinery, farm rental contracts—their content and how they should be prepared,—the physical layout of the farm and its relation to crop rotation, use of machinery and labor, the responsibilities and functions of the farmer as a manager, the importance of farming practices or obtaining the optimum combination of factors used in production, economic reports as aids to the organization and management of the farm, the proper use of farm credit in the operation and management of the farm.

Agr. Econ. s370. Agricultural Extension Methods. Three credits. Prerequisite: Senior or graduate standing. Dean Schaub and staff. Hours by arrangement.

A study of office record systems, office management, program determination, program development, reports and their use; and the obtaining, preparation, and use of material in Extension teaching.

AGRICULTURAL ENGINEERING

Agr. Eng. s130. Farm Equipment. Three credits. Mr. Giles. By arrangement. Pt. 4.

A study of modern mechanical equipment for the farm.

Agr. Eng. s135. Terracing and Drainage. Three credits. Mr. Giles. By arrangement. Pt. 4.

A study of the different methods of disposing of surplus water and the prevention of erosion.

ANIMAL HUSBANDRY AND DAIRYING

A. H. s101. Animal Nutrition I. Three credits. Mr. Ruffner, Mr. Haig. By arrangement.

A study of animal nutrition; physiology of digestion; nutrients; feeding standards; economical and balanced rations. Practical work given.

A. H. s201. Swine Production. Three credits. Mr. Hostetler. By arrangement.

A study of the adaptability of swine, with emphasis on feeding, judging, and management.

A. H. s202. Animal Breeding. Three credits. Mr. Ruffner. By arrangement.

A study of breeding and improvement of our animals; a first-hand study of successful breeding establishments and their problems.

A. H. s208. Dairying. Three credits. Mr. Haig. By arrangement.

The secretion, composition and properties of milk are studied, with factors influencing quality and quantity of milk and cream. The use of the Babcock tests, butter making on the farm, and operation of cream separators constitute the laboratory work.

A. H. s211. Animal Nutrition II. Three credits. Mr. Ruffner, Mr. Haig. By arrangement. Prerequisite: A. H. 101.

A study of all feeding stuffs used in America; laws controlling feeding stuffs; preparation of feeds; home-mixed and commercial feeds.

A. H. s304. Herd Improvement. Three credits. Mr. Haig. By arrangement.

This course is designed for training students as supervisors of herd improvement associations in North Carolina. Rules for advanced registry are studied, and practical work in keeping feed costs, the Babcock test, and bookkeeping necessary for dairy associations.

Courses for Graduates Only

A. H. s402. Research Studies in Animal Husbandry. Three credits. Prerequisite: Eighteen credits in A. H. Staff. By arrangement.

An intensive study of experimental data.

BOTANY

Bot. s101. General Botany. Five recitations, four hours laboratory. Four credits. Mr. Shunk. 8 M. T. W. T. F., 2-4 M. W. Pt. 38.

Nature of the higher plant. A course presenting the fundamentals of the structure and function of the typical flowering plant.

Bot. s102. General Botany. Four credits. Mr. Shunk. 9 M. T. W. T. F., 2-4 T. Th. Pt. 38.

Survey of the plant groups. An introduction to the various major kinds of plants through the study of the life histories of types.

Bot. s203. General Bacteriology. Five recitations, four hours laboratory. Four credits. Mr. Shunk. Prerequisite: Botany 102 or equivalent. 11 M. T. W. T. F., 2-4 T. Th. Pt. 38.

An introduction to the principles of bacteriology. Laboratory work on modern cultural methods of handling and studying bacteria.

Courses for Graduates Only

Bot. s402. Bacteriology: Special Studies. Three credits. Prerequisite: Botany 203, 302. Mr. Shunk. By arrangement.

Special work on restricted groups of bacteria, such as nitrogen bacteria of the soil, milk organisms, and special groups of bacteria in water.

Chem. s101. General Chemistry. Five hours in classroom and four hours in laboratory each week. Four credits. Equivalent to first term General Chemistry as given in the regular college year. Mr. Wilson or Mr. Satterfield. 8 M. T. W. T. F., 1-5 T. W. 114.

Composition and properties of air and water. First principles of chemistry, such as atomic theory, laws of chemical combination, valence, chemical formulas and equations, oxidation, reduction, behavior of gases and solutions. Study of a few typical elements, such as oxygen, hydrogen, carbon, and nitrogen, together with their simpler compounds.

Chem. s103. General Chemistry. Five hours in classroom and four hours in laboratory each week. Four credits. Equivalent to second term General Chemistry as given in the regular college year. Mr. Wilson or Mr. Satterfield. 10 M. T. W. T. F., 1-5 Th. W. 102.

Particular attention given to chlorine, sodium, nitrogen, sulphur, fluorine, bromine, and their compounds. Study of such common substances as salt, lye, soda, carbon disulfide, prussic acid, petroleum, coal tar, acetylene; ammonia and its more interesting uses, such as in ice machines; sulphur dioxide in household refrigerators and as a bleaching and germicidal agent; compounds of nitrogen in warfare and agriculture. Introduction to acids, bases, salts, ionization, hydrolysis, equilibrium, the periodic law and the new theories of the structure of the atom.

Chem. s105. General Chemistry. Five hours in classroom and four hours in laboratory each week. Four credits. Equivalent to third term General Chemistry as given in the regular college year. Mr. Wilson or Mr. Satterfield. 11 M. T. W. T. F. Laboratory 1-5 T. W. 114.

Chemistry of clays, ceramics, glass, cement, soils, fertilizers, insecticides, lime, hard water, alloys, paints, storage batteries, photography, flames and explosions. Compounds and properties of phosphorus, arsenic, bismuth, silicon, boron, potassium, calcium, magnesium, zinc, aluminum, bismuth, lead, nickel, copper, mercury, silver, gold, platinum, and other less common elements. Thermochemistry, colloids, and radioactivity.

Chem. s211. Qualitative Analysis. Two hours lecture, with four laboratory periods of three hours each per week. Equivalent to one term of college work. Five hours credit. Prerequisite: General Chemistry. Mr. Wilson or Mr. Caveness. Arranged. W. 217.

A systematic study and separation of the metallic ions and non-metallic ions into their respective groups, their identification and the chemical reactions involved. The last two weeks will be given over to the complete analysis of mixed salts, compounds, and alloys.

Chem. s212. Quantitative Analysis, A. Two lectures and twelve hours laboratory. Equivalent to one term of college work. Five hours credit. Prerequisite: Qualitative Analysis. Mr. Wilson or Mr. Caveness. Arranged. W. 217.

This work will deal with the theory and practice of making up and standardizing acids, bases, di-chromate and permanganate solutions, also the determination of the strength of unknown acids and bases, the analysis for the per cent purity of iron ores, oxalates, sulphates, magnesium, phosphate rock, etc.

Chem. s213 (214). Quantitative Analysis. Five credits. Mr. Wilson or Mr. Caveness. Required of sophomores in Chemical Engineering and those majoring in Chemistry. Prerequisite: Chem. 211. By arrangement. W. 217.

A continuation of Chem. 212. Substances of more difficult nature are analyzed—minerals, steel, alloys, limestone, Paris green, etc.

Chem. s241. Introduction to Organic Chemistry. Four hours class and five hours laboratory. Four credits. Mr. Satterfield. Prerequisite: Chem. 101, 103, 105. Arranged.

Hydrocarbons, alcohols, aldehydes, ketones, acids, ethers, esters, amino acids, and benzene derivatives; carbohydrates, fats, proteins, and related compounds; vitamins, enzymes, hormones, flavors.

Chem. s340. Food Products and Adulterants. Five hours a week. Three credits. Prerequisite: Chem. 101, 103, 105, and 241. Mr. Satterfield. 9 M. T. W. T. F.

Food principles, cereals, starches, sugars, fats, milk and milk products, the packing-house, food preservation, beverages, spices and condiments; food legislation.

Chem. s341. Vitamins. Five hours a week. Three credits. Prerequisite: Chem. 241 or 321. Mr. Satterfield. 12 M. T. W. T. F.

Application of vitamin hypothesis to animal nutrition; history, nomenclature, properties, distribution, effects of deficiencies, and vitamin values.

Chem. s344. Food and Nutrition. Five hours a week. Three credits. Prerequisite: Chem. 241 or 321. Mr. Satterfield. 10 M. T. W. T. F.

Carbohydrates, fats, proteins, amino acids, minerals, fiber, vitamins, and enzymes; nutritive value of food materials; digestion, food idiosyncrasy; acidosis and alkalosis.

Chem. s451. Chemistry Research. Three credits. Prerequisite: 54 term credits in Chemistry. Open to all graduates. Mr. Satterfield, Mr. Wilson.

Special problems that will furnish material for a thesis.

ECONOMICS

Econ. s201. General Economics. Five hours a week. Three credits. Mr. McNatt. 8 M. T. W. T. F. Pe. 109.

This is the first term of the regular college course in General Economics.

An introduction to the general field of economics. A study of economic institutions and the general principles governing the production and distribution of wealth under the existing economic organization.

Econ. s202. General Economics. Five hours a week. Three credits. Mr. McNatt. 9 M. T. W. T. F. Pe. 13.

This is the second term of the regular college course in General Economics.

Econ. s205. Introduction to Economics. Five hours a week. Three credits. Mr. Green. 8 M. T. W. T. F. Pe. 13.

This course is designed for those students who do not feel able to devote more than one term to the study of economics.

It includes a study of the great fundamental economic laws which apply to all professions and occupations; a study of the production, distribution, and value of economic goods, and a study of the institutions, agencies, and

ideals which dominate, operate, and control the manner, means, and methods of making a living.

Econ. s305. Business Organization. Five hours a week. Three credits. Prerequisite: Econ. 102 or 103. Mr. McNatt. 8 M. T. W. T. F. Pe. 108.

Forms of business enterprise, single enterprise, partnership, joint-stock company, corporation, and principles of business management.

Econ. s307. Business Law. Five hours a week. Three credits. Prerequisite: Econ. 102 or 103. Mr. Green. 10 M. T. W. T. F. Pe. 108.

Required of seniors in Ceramic, Chemical, Civil, Architectural, Electrical, and Mechanical Engineering. Elective for other students.

A general survey of the sources of law, fields of law, contracts, agency, sales, law of partnerships and corporations, negotiable instruments, bailments and carriers, personal property, suretyship and guaranty, bankruptcy, crimes in business.

Econ. s315. Advertising. Five hours a week. Three credits. Mr. Green. 9 M. T. W. T. F. Pe. 109.

Principles and practices of advertising and its relation to the distribution and sales program.

EDUCATION

Courses for Undergraduates

Ed. s203b. Educational Psychology. Five hours a week. Three credits. Required of students in Education; elective for others. Mr. Garrison. 10 M. T. W. T. F. H. 5.

This part of educational psychology is concerned with the physical and mental development of high school boys and girls. Social development; character development; emotional development and control; religious and moral development; and mental hygiene are topics given special consideration.

VOCATIONAL GUIDANCE.—Guidance is recognized as a part of the work of each teacher in the school. Pupils of all ages require assistance in the growth and progress through their school problems. Each stage of school development as elementary, junior high, senior high, and college. requires special attention which the individual teacher may render. In addition to the work done in the classroom, there is that of the school counselor and director of the work whose duty it is to provide materials and programs of work, together with the care of such special cases as require specific aid.

Vocational Guidance, Ed. s320, is a beginning course for advanced undergraduates and graduates, also for teachers in service who wish to help in guidance activities. Occupational Counseling, Ed. s412, is a graduate course for those who have had Ed. s320 and some experience in teaching, and those who have had a wider experience in school and industry. Closely correlated with these courses are those in psychology, sociology, economics, and testing.

Ed. s320. Vocational Guidance. Five hours a week. Three credits. Prerequisite: Twelve credits in Education. Mr. Boshart. 8 M. T. W. T. F. H. 16.

The course in Vocational Guidance is intended to give emphasis to the place of guidance in the school program, covering the elementary, junior high and senior high divisions. It will treat of the development of edu-

cational and vocational guidance, the relation to personnel work, principles and practices of guidance in employment, child legislation, and forms and records.

Ed. s321. Vocational Education. Five hours a week. Three credits. Prerequisite: Twelve credits in Education. Mr. Smith. 11 M. T. W. T. F. H. 16.

This course, dealing with the problems of Vocational Education, is intended to give acquaintance with its underlying philosophy, its place in our system of education, the laws governing it, and the prevailing practices and administration. It is of particular interest to administrators and teachers who have or expect to have to do with the direction of educational work in agriculture, homemaking, industry, and commerce. It deals with all-day, evening, part-time, and general continuation class work, together with the interpretation of the newer ideas of practical education.

Ed. s324. Methods Used in Occupational Studies. Three hours a week. Three credits. Prerequisite: Twelve hours in Education or equivalent. Mr. Boshart. 10 M. T. W. T. F. H. 16.

This course is planned to acquaint teachers with the field of occupations, the selection of suitable instructional materials and its presentation to pupils. The classwork will consist of readings, discussions, visitations, lectures and reports. Analysis of leading groups of occupations will be made with the idea of selecting and preparing teaching units of occupational information or units for use in subject matter courses as civics, English, or shopwork.

Ed. s325. Methods of Teaching Industrial Subjects. Five hours a week. Three credits. Prerequisite: Twelve credits in Education. Mr. Smith. 9 M. T. W. T. F. H. 16.

This course is intended for those persons who are teaching or have a desire to teach industrial shop subjects. It should be of special interest to industrial arts teachers with trade experience, academic teachers with trade experience who would like to teach industrial subjects, and to men from industry who think they would like to teach.

Some of the topics that will be developed are: Federal regulations, objectives, pupil selection, what to teach, how to organize the material, and shop management.

Ed. s328. Diversified Occupations. Five hours a week. Three credits. Prerequisite: Twelve credits in Education. Mr. Smith. 10 M. T. W. T. F. H. 16.

This course is planned for the training of coordinators of studies in diversified occupations. It is intended for experienced teachers who in addition to their teaching have had a couple of years of occupational experience.

In this course typical topics to be discussed are: Federal regulations that must be met, selling the idea to the community, planning related technical information, the selection of students, listing occupations, selecting those occupations that are suitable, occupational analyses, how to start a new program, forms of agreement, equipment necessary, advisory committees, record forms and reports.

Ed. s330. Visual Instruction. Five hours a week. Three credits. Prerequisite: Twelve credits in Education. Mr. Armstrong. 11 M. T. W. T. F. Pe. 201.

An advanced course in the psychology, methods, and technique of visual instruction; its place and limits, evaluation and expense of various aids, aids available. Practice in the making and use of practical visual aids.

Ed. s331. Visual Aids in Social Sciences. Five hours a week. Three credits. Prerequisite: Twelve credits in Education. Mr. Armstrong. 10 M. T. W. T. F. Pe. 201.

A detailed study of visual materials, devices, and procedures applicable to teaching the social sciences, including geography. Emphasis will be given to motivation, facilitating the learning process, and fixation. Various devices will be used by the class.

INDUSTRIAL EDUCATION.—The summer session will emphasize the preparation of teachers, supervisors, and principals for teaching and directing Industrial Education in the various communities of North Carolina. The rapid growth of Industrial Education in our State is creating a demand for a competent personnel for making this work a definite functioning element in education. Courses will be offered in subject matter, methods of teaching, administration, shop practice, and drawing.

Industrial Education depends largely upon the soundness of the philosophy underlying its introduction into the field of education. For this reason professionally minded teachers and administrators will welcome courses giving them a better basis for their classroom activity.

Principals, supervisors, and teachers are needed to introduce and develop the various phases of industrial education in our junior and senior high schools, part-time and continuation schools, and evening schools. The demand is for those who are familiar with both general and vocational education and at the same time capable of placing the proper emphasis upon the more practical phases of education. Supporting courses are offered in the Engineering and Textile Schools.

The underlying purposes of the courses offered in this field is to acquaint those who are responsible for developing the possibilities of industrial education and other shop activity in our school system with prevalent practices and to give helpful aids in program construction. The possibilities of creating interest and motivating school subjects are often lost sight of because of the lack of knowing how to utilize the everyday things about us.

For those who are interested in administrating and teaching industrial education, the following courses will be offered: The Theory of Industrial Arts and Practical Arts Problems are intended largely for the earlier grades while the Problems of the General and Unit Shop, Vocational Education, Occupational Studies, Methods of Teaching Industrial Education and Diversified Occupations are suited to the junior and senior high schools and vocational classes. These courses are correlated with those in mechanical drawing, woodwork, metal work, textiles, and auto-mechanics. They will be taught by instructors of wide experience and will be related to individual needs.

Teachers of academic subjects who have a background of experience in practical shop-work could readily prepare themselves to teach shop and drawing classes in the field of industrial education. The newer element in this field, Diversified Occupations, offers splendid opportunities for those who have had teaching experience and whose interests and abilities are suited to the development and organization needed by the coördinator.

The credit for these courses may be used in renewing certificates, raising certificates, earning new certificates, or college credit.

Ed. s352. Theory of Industrial Arts. Five hours a week. Three credits. Prerequisite: Twelve credits in Education. Miss Bell. 11 M. T. W. T. F. H. 15.

A study of the value and place of Industrial Arts in the public school. Industries will be studied with the idea of finding how closely they are

related to our school subjects. Intended for teachers, supervisors, and principals who are interested in the study of modern educational trends. Emphasis will be placed upon the use of the Industrial Arts to motivate and sustain effort in the learning process.

Ed. s354. Practical Arts Problems. Five or ten hours a week. One and one-half credits or three credits. Prerequisite: Twelve credits in Education or the consent of the instructor. Miss Bell. 9-11 M. T. W. T. F. H. 15.

Intended for the classroom teacher and supervisor for acquaintance with materials and how to use them. Instruction will be given in the development of grade units of work or centers of interest showing the relationship of Industrial Arts with the tool subjects. Practice will be given in making posters, block prints, stencils, plastics, baskets from reeds, raffia, and other materials. Other materials suited to the work in hand will be studied. It will be of aid to administrators in the development of the activity program.

Ed. s368. Measurements in Educational Psychology. Five hours a week. Three credits. Mr. Garrison. 11 M. T. W. T. F.

Prerequisite: Education 203, supplemented by credits in related fields. An introduction to the theory and practice of mental, educational and aptitude testing. A study will be made of the various types of tests useful in educational measurements and vocational guidance. A critical analysis is made of the methods of constructing tests and the application of the results to problems of teaching and guidance.

Ed. s381. Character Education. Five hours a week. Three credits. Prerequisite: Twelve credits in Education. Mr. Cook. 9 M. T. W. T. F.

Factors influencing character development; responsibilities and opportunities of teachers and administrators for the moral and civic conduct of their students; recent trends; difficulties; materials and procedures.

Ed. s390. Philosophy of Industrial Education. Ten hours a week for three weeks. Three credits. Mr. Fryklund. 8-10 M. T. W. T. F.

Place, function, and changing conceptions of industrial education in the curriculum; economic sociological, and psychological aspects, industrial arts and trade training, art and industrial education, the teacher and the public.

Ed. s396. Current Problems in Industrial Arts. Ten hours a week for three weeks. Three credits. Mr. Fryklund. 11-1 M. T. W. T. F.

Curriculum and course revision techniques, analysis techniques, testing, instruction sheets and general shop involve current problems for consideration. Conducted on a seminar basis. Reading assignments, lectures, reports.

Ed. s412. Occupational Counseling. Five hours a week. Three credits. Mr. Boshart. Prerequisite: Ed. 320, 332 or equivalent. 12 M. T. W. T. F. H. 11.

This course is intended for teachers of experience and those interested in the problems of guidance in school and life. Attention is given to group and individual counseling as it may be applied to the junior and senior high school, colleges, or placement offices, and to the procedures of conducting interviews and conferences. Information concerning occupational material will be organized, evaluated, and applied to type cases. The relation to personnel work will be considered as the functions of school and industry are studied.

Ed. s416. Problems in Agricultural Teaching. Five hours a week. Three credits. Prerequisite: Ed. 203, 307, and at least twelve other credits in Education and Agriculture. Experience in agricultural teaching will be accepted in lieu of Ed. 307. Staff. By arrangement. Pe. 201.

Investigations, reports, and a critical evaluation of present practices with constructive remedies. The content of the course will depend on the interests and needs of the individual members of the class.

Ed. s420. Agricultural Education Seminar. One credit. Mr. Cook, Mr. Armstrong. By arrangement. Prerequisite: Eighteen credits in Education.

A critical review of current articles and books of interest to students of agricultural education.

Ed. s421. Research in Special Fields of Education. Staff.

SHOP AND DRAWING COURSES FOR INDUSTRIAL EDUCATION TEACHERS

M. E. s210. Mechanical Drawing for Teachers. Ten hours a week. Three credits Mr. Fornes. 8-10 or 10-12 M. T. W. T. F. P. 106.

Intended for those teaching or preparing to teach mechanical drawing and shop practice. Consists of lectures and drawing-room practices involving problems for the junior and senior high school mechanical drawing. The elements of lettering, instrument practice. projections, intersections, developments, tracing, blue-printing, and methods of instruction will be considered. (For advanced work in drawing see Architectural and Mechanical Engineering.) Text: Engineering Drawing by French.

M. E. s250. Woodworking for Teachers. Ten hours a week. Three credits. Mr. Cope. 2-4 M. T. W. T. F. Shops.

Stresses method of making projects in woodwork as they should be presented in the shops of the public schools. Projects considered are to be used chiefly for grades seven, eight, and nine, or older pupils when beginning. Deals primarily with hand tools, common woods, and elementary finishes. Text: Instructional Units in Hand Woodwork by Tustison and Brown.

M. E. s350. Woodworking for Teachers (Advanced). Ten hours a week. Three credits. Prerequisite M. E. s250 or its equivalent and consent of the instructor. Mr. Cope. By arrangement. Shops.

Emphasis is placed on educationally significant projects adapted to older students where the use and care of both hand and machine tools is an important factor. Opportunity for practice in grinding edged tools, filing and setting of saws, the maintenance of other tools, and the organization and management of tool rooms and supplies. Text: Principles of Woodworking by Hjorth.

ENGINEERING

Architectural

Arch. s100 Pencil Sketching. Five hours per week. Three credits. Mr. Paulson. 9 M. T. W. T. F. D. 307.

Quick sketching of objects as seen and imagined in perspective. Elementary principles of perspective, especially as an aid to visualization.

Arch. s104. Art Appreciation for Teachers. Five hours per week. Three credits. Mr. Paulson. 8 M. T. W. T. F. D. 307.

Picture study of the list suggested by the State Board of Education for grade school use, including paintings, architecture, and sculpture.

Arch. s114. Fine Arts for Teachers. Eight hours per week. Three credits. Mr. Paulson. 11 M. T. W. T. F., 12 M. W. F. D. 307.

Black and white, and color drawing adapted to grade school use. Lettering, illustrating, poster making, etc.

Civil

C. E. s200. Surveying I. Three credits. Mr. Geile and staff. Two sections: one section will run for three weeks, six days a week; the second section will run for six weeks, afternoons only. C. E. Building and field.

The use, care, and adjustment of surveying instruments; elementary land surveying, traverse lines, leveling, stadia measurements; topographical surveying, plane table surveying; office work in connection with field surveying. Laboratory fee $2.00. Text, Tracy, Surveying.

C. E. s310. Advanced Surveying. Three credits. Staff. Required in the summer immediately following the sophomore year in Civil Engineering. Two sections: one section will run for three weeks, six days a week; the second section will run for six weeks, afternoons only. C. E. Building and Field. Prerequisite: C. E. 223 and 227.

Plane table practice, special problems in surveying practice; triangulation, railroad and highway spirals; hydrographic surveying with sextant; plane table problems; the use and rating of current meters; measurement of stream flow; drainage problems. Laying out proposed construction work. Topography, details, special problems. Laboratory fee $2.00.

Mechanical

M. E. s101, s102, s103. Engineering Drawing I. Eight or sixteen hours a week. Two or four credits. Required of Textile Freshmen. Mr. Fornes. 8-10 or 8-12 M. T. W. T. F. S. P. 106.

Drawing board work covering lettering, projections, sections, pictorial drawings, working drawings as related to textile machinery, tracing, and blue-printing. Text: Hoelscher and Mays "Basic Units in Mechanical Drawing."

M. E. s105, s106. Engineering Drawing II. Twelve or twenty-four hours a week. Three or six credits. Required of Engineering freshmen. Agricultural Engineering Freshmen, Landscape Architectural Freshmen and Teachers of Industrial Arts Freshmen. Mr. Fornes. 8-10 or 8-12 M. T. W. T. F. S. P. 106.

Drawing-board work, covering lettering, pictorial drawings, projections, revolution, sections, intersection and development, working drawings, tracing, and blue-printing. Text: Engineering Drawing by French.

M. E. s107. Descriptive Geometry. Twelve hours a week. Three credits. Required of Engineering freshmen, Agricultural Engineering Freshmen, Landscape Architectural Freshmen, and Teachers of Industrial Arts Freshmen. Mr. Fornes. 8-10 or 10-12 M. T. W. T. F. S. P. 106.

This work covers the representation of geometrical magnitudes by means of points, lines, planes, and solids, and the solution of problems relating to them. Text: Applied Descriptive Geometry by Warner.

M. E. s121, s122, s123. Shopwork. Four, eight or twelve hours. One, two or three credits. Required of sophomores in Chemical Engineering and freshmen in Textiles. Messrs. Maddison and Cope. 8-10, 10-12, or 2-4 M. T. W. T. F. Shop.

Use of bench tools, making cabinet joints operation and care of woodworking machinery. Correct methods of staining, varnishing, filling, and gluing various kinds of wood. The forging of iron and steel. Instruction and practice in molding and core making. Cupola practice. Text: Lecturers' Notes.

M. E. s124. Shopwork. Eight hours a week. Two credits. Required of sophomores in Mechanical Engineering and Industrial Engineering. Mr. Cope. 8-10, 10-12 or 2-4 M. T. W. T. F. Shop.

Deals with elementary joinery, finishing, theory of dry-kilning and wood turning. Lectures, demonstrations, and practice in hand work and machine methods. Typical patterns and core boxes are constructed, such as solid, split, and loose-piece patterns; mounting of patterns on boards and their preparation for use in the foundry. Text: Pattern Making by Turner and Town.

M. E. s125. Shopwork. Eight hours per week. Two credits. Required of sophomores in Mechanical Engineering and Industrial Engineering. Mr. Maddison. 8-10, 10-12 or 2-4 M. T. W. T. F. Shop.

Lectures, demonstrations, and practice in molding and core making, furnace operations, melting and casting of ferrous and non-ferrous metals and their alloys. Sand testing. Text: Foundry Work by Stimpson, Gray and Grennan.

M. E. s126. Shopwork. Eight hours per week. Two credits. Required of sophomores in Mechanical Engineering and Industrial Engineering. Mr. Maddison. 8-10, 10-12 or 2-4 M. T. W. T. F. Shop.

A study of the principles and practice as applied to the forging of wrought iron and steel. Lectures, demonstrations, and practice in forge welding. Tool making and heat treatment. Text: "Forging Practice" by Johnson.

M. E. s111, s112, s113. Mechanical Drawing. Eight or sixteen hours a week. Two or four credits. Required of sophomores in Mechanical Engineering and Juniors in Ceramic Engineering. Mr. Fornes. 8-10 or 10-12 M. T. W. T. F. S. P. 106.

Drawing-board work, covering machine fastenings, pipe fittings, elementary cams, technical sketching, working drawings, tracing, and blueprinting. Texts: Engineering Drawing by French, and Applied Descriptive Geometry by Warner.

M. E. s131 or s132 or s133. Metallurgy. Four or eight hours a week. Two or four credits. Required of sophomores in Mechanical and Aeronautical Engineering. Mr. Selkinghaus. 8, 9, 10, or 11 M. T. W. T. or F. P. 100.

An elementary course in the science of metals, regarding their properties, uses, methods of fabrication, production and refining. Includes theory of alloys, corrosion, and various phases of testing. Text: "Engineering Metallurgy", by Stoughton and Butts.

M. E. s227, s228, s229. Machine Shop II. Four, eight, or twelve hours a week. One, two, or three credits. Mr. Wheeler. 8-10, 10-12, or 2-4, M. T. W. T. F. Shop.

Includes laying out work, grinding tools, chipping, drilling, tapping, babbitting bearings and scrapping. Machine work, including centering, straight and taper turning, chicking, screw cutting, shaper work, planer work and index milling, and gear cutting. Text: Machine Tool Work by Turner.

ENGINEERING MECHANICS

E. M. s201. Engineering Mechanics. (abridged). Five hours a week. Three credits. 8:00 M. T. W. T. F. Room CE 223. Mr. Conner. Prerequisite: Math. 201. Co-requisites: Math 203 and Phys. 104. Text: Analytical Mechanics for Engineers by Seely and Ensign. Statics: Concurrent, parallel, and non-concurrent force systems; the determination of their resultants and conditions of equilibrium. Friction, centroids, and moments of inertia.

E. M. s202. Engineering Mechanics. (abridged). Five hours a week. Three credits. 11:00 M. T. W. T. F. Room CE 223. Mr. Conner. Prerequisites: E. M. 201 and Math 203. Co-requisite: Phys. 104. Text: Analytical Mechanics for Engineers by Seely and Ensign. Kinematics and Kinetics.

E. M. s211. Engineering Mechanics. Five hours a week. Three credits. 8:00 M. T. W. T. F. Room CE 223. Prerequisite: Math. 201. Co-requisites: Math. 202 and Phys. 104. Mr. Conner. Text: Analytical Mechanics for Engineers by Seely and Ensign. Statics: Concurrent, parallel, and non-concurrent force systems; the determination of their resultants and conditions of equilibrium. Friction.

E. M. s212. Engineering Mechanics. Five hours a week. Three credits. 9:00 M. T. W. T. F. Room CE 222. Prerequisites E. M. 211 and Math. 202. Co-requisites: Phys. 104 and Math. 203. Mr. Smith. Text: Analytical Mechanics for Engineers by Seely and Ensign. Kinematics, centroids, and moments of inertia.

E. M. s213. Engineering Mechanics. Five hours a week. Three credits. 12:00 M. T. W. T. F. Room C. E. 223. Prerequisites: E. M. 212 and Math. 203. Mr. Smith. Text: Analytical Mechanics for Engineers by Seely and Ensign. Kinetics: The Newtonian laws of motion,work and energy, power, impulse and momentum theories are studied and their applications to special engineering problems are illustrated.

E. M. s220. Strength of Materials. Five hours a week. Three credits. 10:00 M. T. W. T. F. Room CE 222. Prerequisites: E. M. 202 or E. M. 212, Math. 203. Mr. Conner. Text: Resistance of Materials by Seely. Stresses in beams, columns and shafts. Shear, flexure, elementary study of deflection of beams, and the design of columns.

E. M. s221. Strength of Materials. Five hours a week. Three credits. 11:00 M. T. W. T. F. Room C.E. 222. Prerequisites: E. M. 202 or E. M. 212 and Math. 203. Mr. Smith. Text: Elements of Strength of Materials by Timoshenko and MacCullough. A study of the stresses and strains in engineering materials. The study includes tension, compression, shear, and torsion, bending moments in simple beams. The fibre stresses in beams and their distribution throughout the cross section are studied in detail.

E. M. s222. Strength of Materials. Five hours a week. Three credits. 10:00 M. T. W. T. F. Room C.E. 223. Prerequisite: E. M. 221. Mr. Smith. Text: Elements of Strength of Materials by Timoshenko and MacCullough. A continuation of E. M. 221. Various methods are studied for finding the deflection of beams. The determination of stresses in statically indeterminate beams; the study of columns. Combined stresses.

E. M. s230. Hydraulics. Five hours a week. Three credits. 9:00 M. T. W. T. F. Room C.E. 223. Mr. Conner. Prerequisites: E. M. 202, or 213. Text: Hydraulics by Russell.

Fluid pressure, laws governing flow in pipes and conduits, flow through orifices and nozzles and over weirs; losses from friction and other sources. Methods of measuring the flow of streams; determination of water power.

ENGLISH

Eng. s101, s102, s103. Composition. Five hours a week. Three credits. Messrs. Clark and Fountain. 8 M. T. W. T. F.; 11 M. T. W. T. F.; 12 M. T. W. T. F. Pe. 207; Pu. 101.

Illustrative readings and exercises in types of composition; long paper; collateral reading.

Eng. s231. Public Speaking. Five hours a week. Three credits. Mr. Fountain. 10 M. T. W. T. F. Pu. 101.

Prerequisite: Eng. 101, 102, 103.

Speech organization and effective delivery; extempore speeches; audience motivation and use of motivation process; acquisition of ease before audience.

Eng. s263. English Literature III. Five hours a week. Three credits. Mr. Clark. 11 M. T. W. T. F. Pe. 207.

Prerequisite: Eng. 101, 102, 103.

Masterpieces of the nineteenth century, with emphasis on changing tastes and ideas; the impact of scientific development on thought and literature. Parallel readings and papers.

Eng. s286. The Romantic Period. Five hours a week. Three credits. Mr. Clark. 9 M. T. W. T. F. Pe. 207.

Prerequisite: Eng. 101, 102, 103.

Representative poems of Gray, Blake, Burns, Wordsworth, Coleridge, Scott, Southey, Byron, Shelley, and Keats.

FIELD CROPS

F. C. s1. Cotton Classing. Twenty hours a week for six weeks. No. college credit. Mr. Cotner. 9-1 M. T. W. T. F. Pt. 45.

The Summer School of Cotton Classing offers an intensive course in the grading and stapling of cotton.

The course will consist of lectures and daily practice in grading and stapling cotton samples according to the "Universal Cotton Standards."

The course will be given each day, with the exception of Saturday, for four hours a day.

The first period of each day will be devoted to lectures and discussions, and the remaining time will be used in the actual practice of grading and stapling cotton.

The Cotton Classing course is designed for a special group, and does not carry collegiate credit. There is a charge of $27.50 for the course in

Cotton Classing plus a $1.00 infirmary fee. Persons registered for 50 per cent or less of the course will be charged $15.00. All fees are to be paid on or before registration.

A Cotton Classing certificate will be issued by the College to those satisfactorily completing the six weeks course.

The school has been serving the State and neighboring states for seventeen years. The school has international recognition, as men from the following countries have taken the course: South America, India, China, South Africa, Belgium, and Germany.

Persons expecting to attend this course should notify Dr. J. B. Cotner, State College Station, Raleigh, N. C.

F. C. s225. Cotton Classing II. Three or six credits. Mr. Cotner. 9-11 or 11-1.

Required of sophomores in Textile Manufacturing, Chemistry and Dyeing, and Designing.

A study of the universal standards of American upland cotton for grade and staple. Factors that determine grade and their relative value. Practice will consist of classing and stapling three to five thousand samples of cotton.

F. C. s351. Crop Research. Undergraduate credits, 3-9; Graduate credits, 2-6. Elective for graduates and advanced undergraduates. Mr. Cotner. By arrangement. Pt. 26.

F. C. s415. Plant Breeding Research. Three credits. Prerequisite: F. C. 345. By arrangement. Mr. Cotner.

Inheritance problems of the plants. Available during any season appropriate to the study of the particular crop.

GEOLOGY AND PHYSICAL GEOGRAPHY

Geol. s101. Earth History. Five hours a week. Three credits. Mr. Parker. 9 M. T. W. T. F. Pr.

Open to both college students and teachers who are interested in a better understanding of the world about them.

An introductory course in general geology dealing with the changes which have taken place in the earth and the physical and life processes which have brought about these changes. The first half of the course deals with the processes of physical and dynamical forces, while the second half deals with the historical development of the earth as it has been affected by those forces and by life processes.

Geol. s120. Physical Geology. Three lectures; four or six hours laboratory and field work. Three or four credits. Mr. Parker. 8 M. W. F. Laboratory by arrangement. Pr.

Physical Geology as related to forces acting on and in the earth, and materials in the earth's crust.

Geol. s291. Geology of North Carolina. Three lectures; four hours laboratory. Three credits. Mr. Parker. 12 M. W. F. Laboratory by arrangement. Pr. Elective. Prerequisite: Geol. 101, 120 or 201.

Also open to teachers who are interested in the geology of North Carolina and who may be interested in helping students to collect and assemble groups of the common rocks and minerals from different sections of the State.

The course will cover the physical geography, general geology, common rocks and minerals, and mine and quarry products of the State.

HISTORY

Hist. s101. Economic History. Five hours a week. Three credits. Mr. Bauerlein. 8 M. T. W. T. F. Pe. 1.

An analysis of the social and economic forces at work in Europe which resulted in the colonization of America; topical treatment of the various phases of the economic life of the American colonists as a background for an examination of the economic aspects of the American Revolution and the formation of the Constitution of the United States.

Hist. s102. Economic History. Five hours a week. Three credits. Mr. Bauerlein. 9 M. T. W. T. F. Pe. 1.

Beginnings of national growth; westward expansion; consideration of the various phases of American economic life during the period prior to the Civil War as a basis for a treatment of the economic significance of Sectionalism; conditions in the North and South during the war.

Hist. s322. Contemporary History of the United States. Five hours a week. Three credits. Mr. Bauerlein. 11 M. T. W. T. F. Pe. 1.

A chronological treatment of the political, diplomatic and constitutional development of the United States during the twentieth century in the light of its economic and social significance.

HORTICULTURE

Hort. s102. Plant Propagation and Nursery Practice. Three credits. Mr. Randall. 9 M. T. W. T., 2-4 M. W. Pk. 308. (Minimum enrollment eight students.)

Study of methods and practice in seedage, cuttage, separation and division, budding and grafting. Cultural principles and practices in growing nursery stock.

Hort. s228. Home Floriculture. Three credits. Mr. Randall. 11 M. T. W. Th., 2-4 T. Th. Pk. 308. (Minimum enrollment eight students.)

Principles and methods of growing garden flowers and house plants, including varieties and their adaptability.

MATHEMATICS

Math. s100b. Mathematical Analysis. Five hours a week. Three credits. Mr. Clarkson. 12 M. T. W. T. F. Pu. 3. Text: Lee.

The study of trigonometric functions with their applications to the solution of the right and oblique triangles, with numerous problems. Also, a brief study of trigonometric equations and identities, and inverse functions.

Math. s100c. Mathematical Analysis. Five hours a week. Three credits. Mr. Cell. 9 M. T. W. T. F. Pu. 5. Text: Lee.

Simple and compound interest, annuities, sinking funds, and amortization and valuation of bonds, and other applications.

Math. s101. Algebra. Twelve hours a week. Six credits. Mr. Park. 11-1 M. T. W. T. F. S. Pu. 2. Text: Fisher.

Progressions, binomial theorem, undetermined coefficients, logarithms, compound interest and annuities, permutations and computations, the general theory of equations, and the solution of higher equations.

Math. s102. Trigonometry. Twelve hours a week. Six credits. Mr. Clarkson. 8-10 M. T. W. T. F. S. Pu. 3. Text: Clarkson and Bullock.

Definitions of trigonometric functions, derivations of formulae, solution of plane and spherical triangles, and the solution of many practical problems.

Math. s103. Analytical Geometry. Twelve hours. Six credits. Prerequisite: Mathematics 101 and 102. Mr. Cell. 11-1 M. T. W. T. F. Pu. 5. Text: Smith, Gale and Neelley.

Loci of equations, the straight line, circle, parabola, ellipse, hyperbola, and the general equation of the second degree.

Math. s202. Integral Calculus I. Eight hours a week. Four credits. Prerequisite: Mathematics 201. Mr. Bullock. 11-1 M. T. W. T. F. Pu. 8. Text: Granville, Smith, and Longley.

Methods of integration, the study of the definite integral, with applications to problems in areas, volumes, surfaces, and lengths of arcs.

Math. s203. Integral Calculus II. Eight hours a week. Four credits. Prerequisite: Mathematics 202. Mr. Levine. 8-10 M. T. W. T. F. Pu. 4. Text: Granville, Smith, and Longley.

Centroids, radii of gyration and moments of inertia, problems in work and liquid pressure, double and triple integrals, infinite series, hyperbolic functions, and differential equations.

MODERN LANGUAGES

German

M. L. s304. Scientific German (Introductory). Five or ten hours a week. Three or six credits. Mr. Hinkle. 10 M. T. W. T. F. Pe. 212. Prerequisite: M. L. 103-4 or equivalent.

This course consists of a series of readings and translations of relatively simple scientific German, supplemented by lectures on scientific terminology, word order, vocabulary analysis and other matters of linguistic technique. The work is designed to meet the needs of students whose interest in the language is primarily that of the acquisition of a reading ability. Since the choice of reading material is adjusted to individual needs, it may be taken by students of varying degrees of previous linguistic training. Daily reports and conferences are required. Students doing a translation project with this course will register for double credit.

French

M. L. s202. French Prose (Intermediate). Five or ten hours a week. Three or six credits. Mr. Hinkle. 9 M. T. W. T. F. Pe. 212. Prerequisite: M. L. 101-102 or equivalent.

This course consists of a series of readings and translations of relatively simple French, supplemented by lectures on terminology, vocabulary analysis, and other matters of linguistic technique. The work is designed to meet the needs of students whose interest in the language is primarily that of the acquisition of a reading ability. Since the choice of reading material is adjusted to individual needs, it may be taken by students of varying degrees of previous linguistic training. Daily reports and conferences are required. Students doing a translation project with this course will register for double credit.

General Courses

M. L. s411. Masterpieces of German Literature. Five hours a week. Three credits. Mr. Hinkle. 11 M. T. W. T. F. Pe. 212. Prerequisite: M. L. 316 or equivalent.

This course consists of a study of outstanding literary productions in the various types of German literature, with lectures on the cultural background out of which they have developed. It is designed primarily to meet the needs of teachers and advanced students who wish to supplement their knowledge of their own literature with a survey of similar contributions in the literature of other civilizations. Attention is given to the literary monuments in such a manner as to give a brief outline of German literary development. Daily reports and conferences are required.

Translation Projects

In connection with the Translation Service of the Modern Language Department an opportunity is given graduate and advanced under-graduate students in the summer session to do a translation project as a means of preparation for a reading knowledge examination in one of the above mentioned languages. Since these translations projects must be done in connection with class work, they are restricted to registrants in the above courses. Students doing such projects are required to register for the same, this registration having the value of a three-credit course, and being in addition to at least one other language course.

PHYSICAL EDUCATION

P. E. s101-2-3. Fundamental Activities. Four hours practice. One credit. Mr. Miller. By arrangement. Gym.

Freshman requirement. Individual health and physical efficiency of each student, based on standardized athletic, gymnastic, and efficiency tests.

P. E. s201-2-3. Sports Activities. Four hours practice. One credit. Mr. Miller. By arrangement. Gym.

Sophomore requirement. Election permitted in the popular sports for healthful exercise and a fair degree of skill in them.

P. E. s401. Social Recreation. Five hours a week. 3 credits. Mr. Miller. By arrangement. Gym.

This course is especially prepared to meet demands made of teachers of agriculture to assume leadership in social and recreational activities. The content of the course deals with the organization, supervision and practice work in athletic and social activities for parties, picnics, camps, banquets and similar occasions.

Note: Students in the three weeks' course will interview their adviser in Agricultural Education.

PHYSICS

Physics s103, s104. Physics for Textile Students. Four or eight credits. Five hours class work, two two-hour laboratory periods each week for four credits. Double this for eight credits. Mr. Bartlett. 9 M. T. W. T. F.; 2-4 M. W.; 9-11 M. T. W. T. F.; 2-4 M. T. W. T. D. 209. Prerequisite: Math. 100.

Industrial Physics, with emphasis on practical applications to the textile industry.

Physics s112, s113. Physics for Engineers. Four or eight credits. Mr. Derieux. 8 M. T. W. T. F.; 10-1 M. W.; 8-10 M. T. W. T. F.; 10-1 M. W. D. 212.

An advanced treatment of General Physics. First-, second- or third-term work may be taken or any two terms taken simultaneously.

Physics s107. Descriptive Astronomy. Five hours a week. Three credits. Mr. Heck. 12 M. T. W. T. F. D. 212.

A descriptive course covering the most interesting elements in the study of the sun and planets and the stars. The modern interpretation of the universe as a whole given in this course makes it valuable as a background to a student or teacher of any subject. Observation periods, using the telescope on top of the physics building, will be substituted at times for class lectures.

Physics s205. Light in Industry. Three hours credit. Mr. Lancaster. 11 M. T. W. T. F. D. 209.

Fundamentals of light, illumination, and color, with the principles applied to the selection, mixing, harmony, matching, lighting, photography, and pigments.

Physics s212. Photography. Four hours class work and two laboratory periods each week. By arrangement. Three credits. Mr. Bartlett. D. 202.

A general course in photography covering cameras and lenses, principles of exposure, development and printing; lantern slides, projection printing, and color photography.

Physics s209. Meteorology. Three hours credit. Mr. Heck. 11 M. T. W. T. F. D. 113.

Causes of weather change, methods of forecasting, and peculiarities of the weather of North Carolina. Blair, **Weather Elements.**

Physics s411. Research.

Graduate courses in physics will be given if there is sufficient demand.

POULTRY SCIENCE

Poul. s305. Poultry Diseases. Three credits. Mr. Gauger or Mr. Dearstyne. By arrangement. R. 208.

Common diseases of poultry as found in North Carolina; seasonal anticipation of diseases; autopsy methods and practice; poultry sanitation.

PSYCHOLOGY

Psychol. s101. Introduction to Psychology. Five hours a week. Three credits. Mr. Garrison. 9 M. T. W. T. F. H. 5.

A study of the structure, function, and laws of human behavior, with application of psychology to everyday life.

Psychol. s203b. Educational Psychology. Five hours a week. Three credits. Required of students in Education; elective for others. Mr. Garrison. 10 M. T. W. T. F. H. 5.

(For a description of course, see Ed. 203b.)

Psychol. s368. Measurements in Educational Psychology. Five hours a week. Three credits. Mr. Garrison. Prerequisite Ed. 203 and six credits in education. 11 M. T. W. T. F. H. 5.

(For a description of course, see Ed. 368.)

RELIGION

Rel. s300. Introduction to Religion. Five hours a week. Three credits. Mr. Hicks. 10 M. T. W. T. F. Pe. 204.

Characteristics of the major religious sects of America and a brief survey of recent trends in religious thought.

Rel. s303. Comparative Religion. Five hours a week. Three credits. Mr. Hicks. 11 M. T. W. T. F. Pe. 204.

Brief history, general characteristics, and social significance of the major living religions of the world.

Rel. s306. Ethical Problems of Adolescence. Five hours a week. Three credits. Mr. Hicks. 9 M. T. W. T. F. Pe. 204.

A study of typical adjustment problems of modern youth, with special consideration to changing sex standards and the evolution of new values in this connection.

SOCIOLOGY

Soc. s202. Introduction to Sociology. Five hours a week. Three credits. Mr. Winston. 8 M. T. W. T. F. Pe. 209.

An introduction to the basic principles underlying social life and the factors connected with it. Identical with the first term of General Sociology.

Soc. s400. Criminology. Five hours a week. Three credits. Prerequisite: Soc. 102, supplemented by credits in related fields. Mr. Winston. 9 M. T. W. T. F. Pe. 209.

Causes and conditions leading to crime, methods of handling criminals, and various factors in producing criminal behavior. In the summer term, the special relationship existing between school and other social maladjustments and criminal behavior will be stressed.

Soc. s404. Educational Sociology. Five hours a week. Three credits. Prerequisite: 9 term credits in the Social Sciences, including Sociology 202. Mr. Winston. 10 M. T. W. T. F. Pe. 209.

The application of the principles of Sociology to the practical problems of education. Emphasis is placed on the relationship between adjustment processes in the school and in the larger social world.

Soc. s415. Research in Applied Sociology. 2 credits. By special arrangement with the instructor, properly qualified students may pursue an individual research problem. Mr. Winston. Pe. 202.

Individual research problems in applied fields of Sociology, such as problems of the family, population problems, social work problems, rural-urban relationships, student success, American leadership.

SOILS

Soils s265. Soil Fertility. Four hours of class, one laboratory period a week. Three credits. Mr. Clevenger. 11 M. T. W. T. Laboratory to be arranged. Pt. 16.

A course dealing with the chemical and biological properties of soils as related to soil fertility.

Soils s310. Fertilizers. Four hours of class and one laboratory period a week. Three credits. Mr. Clevenger. 10 M. T. W. T. Laboratory to be arranged. Pt. 16.

A study of the sources, characteristics, and utilization of fertilizers.

TEXTILES

The Textile School at State College occupies a place of merited leadership in this country. A state with North Carolina's rank in the textile field needs to take advantage of the latest developments in research and training in this, North Carolina's largest industry. The Textile School offers its equipment and faculty to the people of the State during the Summer School.

Courses in textiles designed for men who are employed in the manufacturing plants, as well as courses for teachers who are employed in the textile communities, will be given. These courses will be arranged on a unit basis in order to meet the needs of the various groups who may wish to come to the College for different periods.

If there is sufficient demand, a second summer session of textile courses will be offered from July 22 to August 31. Students interested in attending this special session should communicate with Dean Thomas Nelson of the Textile School as early as possible, but not later than July 10. The courses given will depend upon the requests received.

Tex. s101. Textile Principles Laboratory. One, two or three credits. Mr. Peeler. By arrangement. Textile Building.

Operation of plain and automatic looms and carding and spinning machines.

Tex. s102. Yarn Manufacture 1. Five hours a week. Three credits. Mr. Hilton. 10 M. T. W. T. F. Textile Building.

Mixing of cotton, description and setting of openers, pickers, and cards. Production, speed, and draft calculations.

Tex. s103. Yarn Manufacture Laboratory I. One or two credits. Mr. Hilton. By arrangement. Textile Building.

Operation and fixing of machines. Grinding and setting cards.

Tex. s104. Knitting I. Four hours a week. Two credits. Mr. Lewis. 12 M. T. W. T. Textile Building.

Selection and preparation of knitting yarns, knitting mechanisms, plain and rib knitting machines, circular ribbers, and circular automatic machines.

Tex. s105. Knitting Laboratory I. One, two, or three credits. Mr. Lewis. By arrangement. Textile Building.

Operation of machines, practical experiments, hosiery analysis, topping, transferring, and looping.

Tex. s106. Fabric Structure and Analysis. Eight or sixteen hours a week. Two or four credits. Mr. Lewis. By arrangement. Textile Building.

Systems of numbering woolen, worsted, silk, linen, rayon, and cotton yarn. Plain, twill, and sateen weaves. Ornamentation of plain weaves; wave designs; pointed twills; diamond effects; plain and fancy basket weaves; warp and filling rib weaves.

Analyzing plain, twill, sateen, and other fabrics made from simple weaves, ascertaining the number of ends and picks per inch in sample. Fabric analysis calculations.

Tex. s108. Power Weaving Laboratory. One or two credits. Mr. Peeler. By arrangement. Textile Building.

Operating and fixing of plain, automatic, and drop-box looms. Pattern chain building for drop-box looms.

Tex. s115. Textile Principles. Five hours a week. Three credits. Mr. Peeler. 10 M. T. W. T. F. Textile Building.

Principles of manufacture involved in the textile industry. Elementary calculations for yarns and fabrics; harness and reed calculations; loom production calculations.

Tex. s201. Yarn Manufacture II. Five hours a week. Three credits. Mr. Hilton. 9 M. T. W. T. F. Textile Building.

Construction of draw frames; sliver lapper; ribbon lapper, comber; mechanical and electrical stop motions, description and setting of the different parts; weighting of rolls; types of roll covering; care of machines; fly frame builder and differential motions.

Tex. s202. Yarn Manufacture Laboratory II. One, two, or three credits. Mr. Hilton. By arrangement. Textile Building.

Operation and fixing of draw frames; sliver lappers; ribbon lapper; comber and fly frames. Changing of hank roving and the setting of rolls and speeder motions.

Tex. s205. Fabric Design and Analysis I. Ten or twenty hours. Three or six credits. Mr. Hart. 10, 11 M. T. W. T. F.; 2-5 M. T. W. T. F. Textile Building.

Construction of fancy weaves, such as broken twills, curved twills, entwining twills, granite weaves. Imitation leno; honeycomb weaves; fabrics backed with warp or filling; fabrics ornamented with extra warp or filling; combining weaves together to produce new patterns.

Analyzing samples of fancy fabrics for design; drawing in draft, reed, and chain plan. Calculating particulars to reproduce fabric from data obtained from sample.

Tex. s208-209. Dobby Weaving Laboratory I or II. One, two, three, or six credits. Mr. Hart. By arrangement. Textile Building.

Preparation of warps for weaving cotton and rayon fabrics on dobby looms; starting up warps in looms; fixing single and double index dobbies; pattern chain building; operation of dobby looms.

Tex. s301. Yarn Manufacture IV. Five hours a week. Three credits. Mr. Hilton. 8 M. T. W. T. F. Textile Building.

Spinning; spooling; twisting. Description and setting of different parts. Builder of motions for warp and filling. Bobbin holders, thread guides, traverse motions. Ply yarns. Calculations for twist, speed, and production.

Tex. s311. Fabric Analysis. Six or twelve hours. Two or four credits. Mr. Shinn. 2-5 M. W. or 2-5 T. Th. Textile Building.

Analyzing samples of cotton, wool, worsted, linen, rayon, and silk fabrics for size of yarns, ends and picks per inch, weight of warp and filling, so as to accurately reproduce samples analyzed. Obtaining design, drawing in draft, chain, and reed plan for fancy fabrics, such as stripes, checks, extra warp and extra filling figures, leno fabrics, jacquard fabrics, draperies.

Tex. s313-314. Cotton and Rayon Weaving Laboratory I or II. One, two, three or six credits. Mr. Hart. By arrangement. Textile Building.

Operation and fixing of dobby, pick and pick, and jacquard looms. Preparation of warps to weave rayon and fine cotton fabrics. Building of box, dobby, and multiplier chains.

Tex. s320. Leno Design. Five hours a week. Three credits. Mr. Shinn. 11 M. T. W. T. F. Textile building. Prerequisite: Fabric Design and Analysis, Tex. 205.

Leno weaves with one, two or more sets of doups. Combinations of plain and fancy weaves with leno. Methods of obtaining leno patterns. Methods of making original designs for dress goods, draperies.

Tex. s321. Dobby Design. Five hours a week. Three credits. Mr. Shinn. 9 M. T. W. T. F. Prerequisite: Fabric Design and Analysis, Tex. 205. Textile Building.

Designing fabrics, such as fancy crepes, figured double plain, matelasse, velvets, corduroys, pique, lines of samples.

ZOOLOGY

Zool. s101. General Zoology. Five recitations, four hours laboratory. Four credits. Mr. Harkema. 9 M. T. W. T. F. Laboratory arranged. Z. 7.

A study of the structures and function of the vetebrates, with special reference to man and the rat.

Zool. s304. Genetics. Four credits. Mr. Bostian. By arrangement. Prerequisite: Bot. 101 and 102 or Zool. 101.

Basic principles of heredity and variation. Students carry on and analyze breeding experiments, analyze inheritance in various animals and plants.

Courses for Graduates Only

Zool. s403. Research in Zoology. Three credits. Mr. Metcalf, Mr. Mitchell, Mr. Bostian. By arrangement. Prerequisite: Eighteen term credits in Zoology.

The student will be assigned a problem in development morphology, ecology, physiology, genetics, or taxonomy.

THE UNIVERSITY OF NORTH CAROLINA

CHAPEL HILL, N. C.

1939 SUMMER SESSION

Firm Term: June 8-July 18.
Second Term: July 19-August 26.

The 1939 Summer Session of the University of North Carolina at Chapel Hill offers undergraduate and graduate courses in Archaeology, Art, Astronomy, Botany, Chemistry, Dramatic Art, Economics and Commerce, Education, English, Geology, German, Greek, History, Latin, Law, Library Science, Mathematics, Music, Pharmacy, Physical Education, Physics, Political Science, Psychology, Public Welfare, Romance Languages, Rural Social Economics, Sociology, and Zoology.

Special consideration is to be given during the summer of 1939 to appropriate courses for Superintendents, High School Principals, Elementary Principals, Supervisors, Educational Counselors, and Elementary and Secondary Teachers, and Physical Education Directors.

Courses in practical and industrial arts have been provided for grade teachers and secondary school teachers.

An intensive program in Music Education, including courses in public school music for the elementary school, the high school glee club, band and orchestra work has been arranged.

Practical courses in Physical Education for teachers will be offered through the facilities of the new $650,000 gymnasium and swimming pool.

A special committee will direct a rich and varied recreational program.

UNIVERSITY FEES

For Each Term of Six Weeks

Registration Fee	$12.00
Course Fee Per Quarter Hour Credit	$ 2.75

Room rent in the University Residence Halls (other than Spencer Hall or the Graduate Clubs) is $7.50 per term. It is possible for one to eat three well-balanced meals a day in the University Dining Hall Cafeteria at a cost ranging from $18.00 to $25.00 per month.

For further information write:

R. B. HOUSE,
Dean of Administration,
Chapel Hill, N. C.

THE WOMAN'S COLLEGE
OF
THE UNIVERSITY OF NORTH CAROLINA

GREENSBORO, N. C.

SIX WEEKS' SESSION: JUNE 7 TO JULY 15, 1939

Plans are now being formulated for a number of the courses to run for nine weeks in order that they may be adjusted to our regular semester basis. *Dates for nine weeks' course will be June 7 to August 5.* It is hoped that the summer school will eventually be a nine weeks term.

The chief purpose of the Summer Session is to serve students and teachers of North Carolina to the greatest possible extent at the least possible cost.

Distinctive features of the Summer Session at the Woman's College are:

1. Courses in elementary and high school education.
2. Graduate work in Home Economics and Business Education.
3. New courses in Art.
4. Regular and special courses in Music.
5. Observation and Nursery School.
6. Placement service without charge.
7. Social and recreational program under trained leadership.

Courses will be offered for college students who wish to advance their standing or make up work.

Expenses are as follows:

Fees and charges	$20.00
Board, room, and laundry	33.00
	$53.00

Expenses are as follows for nine weeks:

Fees and charges	$30.00
Board, room, and laundry	50.00
	$80.00

For further information write:

DEAN W. C. JACKSON,
The Woman's College,
Greensboro, N. C.

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